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Rate Setting Guide for Prepaid Medicaid Contracts

Department of Health, Education & Welfare • Health Care Financing Administration

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RATE SETTING GUIDE FOR
PREPAID MEDICAID CONTRACTS

This report is made pursuant to grant number 96-P-90299/9 from the Health Care Financing Administration to the California Department of Health Services. The name of the person employed by the grantee, with managerial responsibility for such work, and for the content of this report is Mr. Rigby E. Leighton.

The Project Officer for this grant is Mr. Sidney Trieger, a staff member within the Health Care Financing Administration, Office of Policy, Planning, and Research. The views and opinions expressed in the report are the grantee's and no endorsement by the Health Care Financing Administration or the Department of Health, Education, and Welfare is intended or should be inferred.

PREFACE

Federal regulations stipulate that per-capita rates prepaid to health maintenance organizations by State Title XIX agencies on behalf of enrolled Medicaid beneficiaries be determined by actuarial methods. The regulations, however, do not specify the precise actuarial method to be used by State agencies.

This volume, the result of a research and demonstration grant from the Health Care Financing Administration, describes three approaches to actuarial rate setting.

Written for both the Title XIX agency administrator and the agencies' technical staff, the volume focuses first on the policy issues involved in rate setting, then proceeds to set forth general guidelines for determining fee-for-service maximums, actuarially setting rates, adjusting community rates for Medicaid beneficiaries, adjusting rates for the age and sex of the beneficiaries, and sharing risks. In addition, it discusses the type and amount of resources needed by the State agency to undertake prepaid rate development.

TABLE OF CONTENTS

Acknowledgments... i

Chapter 1: Introduction... 1

Chapter 2: Concepts and Issues... 7

Chapter 3: A Conceptual Model... 15

Chapter 4: Fee-For-Service Maximum... 25

Chapter 5: Commercial Rate Maximum... 59

Chapter 6: Rate-Setting Methods... 67

Chapter 7: Adjustment Factors... 95

Chapter 8: Risk Sharing... 109

Chapter 9: Administration... 121

Appendix 1: Medi-Cal Budget Projection Method A1-1

Appendix 2: Prepaid Health Plan Reporting Requirements A2-1

ACKNOWLEDGMENTS

This book is one of the final products of the rate-setting demonstration conducted under a DHEW grant by the Prepaid Health Research, Evaluation and Demonstration (PHRED) Project. The major credit for success of that demonstration--which did in fact substantially modify the rate development methods used in California's prepaid health plan program--is due to Nina Wexler. Nina had the persistence and ingenuity necessary to work through technical problems resulting from minimally adequate data, and to overcome the recalcitrance of a high-inertia government bureaucracy. She also had the professional demeanor necessary to win the trust of the Medicaid-contracting HMOs in California, which resulted in their voluntary sharing of valuable information. At the end of the PHRED rate-setting demonstration Nina returned to the private sector, but her contribution will continue to have impact for some time to come.

The existence of the PHRED Project itself is due to the efforts of Thomas G. Moore, Jr., more than any other single person. As special consultant to the Department of Health during 1975, Tom developed the original Project proposal and accomplished funding of the rate-setting component. After funding, the Project would not have survived without personal support and encouragement from Jerome A. Lackner, MD, Director of the Department of Health. The administrative skills of Bruce Yarwood brought a stability to the PHP program which it had not had before, and thus created a context in which the Project was not only able to survive but have good impact.

The Project has received policy guidance, technical advice, and encouragement from its Technical Advisory Committee, comprising the following individuals:

Adele Amodeo, MPH
Myrtle Caton, MD, MPH
Gordon Cumming
Paul O'Rourke, MD, MPH
Milton I. Roemer, MD
Paul Sanazaro, MD

John van Steenwyk, of Martin Segal Company, was the principal consultant to the Project during the rate-setting demonstration, but his role went beyond that of the usual technical consultant. Indeed, it was John's prior consulting activities with the Department of Health that formed the basis for the rate-setting demonstration, and a major part of the original Project proposal was his work. In effect, John was a preceptor for the demonstration.

Within the PHRED staff, Charles Drew accomplished the revisions in reporting requirements which were necessary in order to obtain data suitable for actuarial rate-setting (reflected in Appendix 2 of this book). Jim Singer

was responsible for editing of the book. Several other staff members made important contributions, but John Teeter, Deputy Project Director, should be singled out for recognition. John assumed responsibility for most internal management functions and also tackled the extremely vexing problems of bureaucratic red tape, thus freeing others to focus on the substance of the demonstration.

Finally, this book would not have existed without the efforts of Maggie Cummins, who as the Project's supervising secretary was responsible for seeing to it that the words actually got on paper.

Rigby Leighton, Project Director
August 1978

CHAPTER 1: INTRODUCTION

This book contains guidelines for state Medicaid agencies to use in the development of prospective capitation rates for contracts with Health Maintenance Organizations (HMOs). The guidelines presented in this book represent a mixture of policy and technical issues that are relevant to rate-setting activities.

For administrators in single state agencies, this book will provide an overview of the technical requirements for prepaid rate-setting--the types of data needed, and the general form of actuarial analysis that we recommend. For analysts within a single state agency, the following chapters present a discussion of underlying issues, a conceptual framework, and specific illustrations of how to proceed.

But this is not a cookbook; nor can it be because of the variation in data resources from state to state and in staff resources available to Medicaid agencies. If the procedures outlined in the following chapters are followed, we believe that an adequate rate-setting method will result. We trust, however, that most states will regard this document as only a starting point in their own implementation of prepaid rate-setting methods.

Background

This book was developed in the context of California's prepaid health plan (PHP) program. The label "prepaid health plan" refers to HMOs or HMO-like organizations that contract with the State of California to provide care to Medicaid beneficiaries. This alternative to fee-for-service Medicaid was begun in California with pilot projects in 1968; in 1972 it became a high-priority program.

At its peak, California's PHP program comprised 53 contracting plans that were serving a total of 250,000 Medicaid beneficiaries, or about 10 percent of the state's Medicaid total. In spite of its quantitative success, the PHP program came under severe criticism for a variety of alleged abuses--misrepresentation in plans marketing to Medi-Cal beneficiaries, selective enrollment of relatively healthy people, inadequate access to care, and inadequate quality of care.

Criticism was also leveled at the state's method for determining the rates that would be paid to the PHPs. In the first two years of the program, rates were determined by negotiating independently with each contracting plan. In this negotiation, the state representatives used as their benchmark the target of rates no higher than 90 percent of the average per capita costs under fee-for-service Medicaid.

With respect to this benchmark, the state was successful in its negotiations. Subsequent analysis showed that the rates for the first year of the program averaged 85 percent of fee-for-service per capita costs, and they averaged 86 percent for the second year of the program. There was, however, considerable variation among the plans in the rates negotiated. In fact, a few plans had rates that were higher than the fee-for-service per capita costs. This inequity in the rates led to charges of political influence and the practice of negotiating rates was dropped.

The next phase of the rate-setting evolution in the PHP program, which lasted from 1974 to 1977, was the development of standard rates for each county. That is, for each county four capitation rates were specified, one for each of the four aid categories (the public assistance AFDC, ATD, OAS, and AB categories) whose beneficiaries were eligible for PHP enrollment. The exact method of calculating these rates varied from year to year but, in general, the PHP rate increases were linked to rate increases allowed in the fee-for-service portion of California's Medicaid program.

This rate-setting method continued to receive criticism as not meeting contemporary standards of actuarial analysis. The criticism came from the PHPs themselves and from state and federal audit agencies. By 1975 it became apparent to both the state and the U.S. Department of Health, Education and Welfare that a significant change in the rate-setting method was necessary.

The PHRED Project

This change was accomplished through the Prepaid Health Research, Evaluation and Demonstration (PHRED) Project, a federally funded project located in the California Department of Health. The PHRED agenda includes a variety of issues other than rate setting--notably, marketing alternatives and quality assurance monitoring--but rate setting was the first phase of the project to be initiated. Using guidelines from the consultant reports that the Department of Health had already obtained from the Martin Segal Company, PHRED began in 1976 to assemble the resources needed to demonstrate actuarial rate setting for the PHP program.

The principles of actuarial rate setting for Medicaid-contracting HMOs were demonstrated in the Department's rate determination cycle for fiscal year 1978 (that is, rates to be effective July 1977). PHRED's rate-setting demonstration was formally completed by the end of 1977, but the PHRED staff continued to assist the Department in the transition to full scale application of the actuarial methods for the fiscal 1979 rates. Many of the illustrative statistics used in this book were derived during California's fiscal 79 rate-setting analysis.

Model For Medicaid Agencies

The HEW Department's objective in funding the PHRED Project was not just to change the rate-setting method within the California Medicaid program but rather to demonstrate rate-setting techniques that could be used in other states as well. This book is intended to help accomplish that objective--it contains the PHRED Project's documentation of the principles and the methods that ought to be considered when setting prepaid capitation rates.

California was the first state to plunge deeply into the use of prepaid contracts for Medicaid. In the course of this pioneering effort a number of mistakes were made which are still being rectified, and the PHP program developed a notoriety that lingers on in spite of extensive resolution of earlier problems. In this book we have attempted to generalize from this experience to develop principles that will be applicable in other states, but much of the content still reflects the context in which the PHRED Project exists--California's PHP program.

We will, for example, cite California law as it relates to rate-setting requirements--even though we would not expect any other state yet to have similar law. This is because recent amendments to the California Welfare and Institutions Code represented the Legislature's reaction to earlier failure by the State to adopt adequate rate-setting methods. We quote this law here as indication to other states of what their own legislators' expectations are likely to be if they proceed extensively into Medicaid contracts with HMOs. If those expectations are met through administrative procedures, it should be unnecessary for other states to have stringent rate-setting specifications embodied in law, as is now the case in California.

Structure of the Book

Following is a summary of the chapters and appendices that comprise the remainder of this book:

1. Chapter 2: Concepts and Issues. In this chapter we cite the Federal regulations and the California Welfare and Institutions Code as sources of fundamental requirements for prepaid rate setting. Four major requirements are identified: The capitation rates for Medicaid-contracting HMOs shall be (1) actuarial, (2) reasonable, (3) related to the HMO's community rate, and (4) not more than the equivalent per-capita cost under fee-for-service. The meaning of each of these requirements is defined and discussed.

2. Chapter 3: A Conceptual Model. This chapter presents the "DUC Model"--a simple mathematical construct that serves as a conceptual framework within which specific aspects of rate

setting are discussed in subsequent chapters. The model describes the interaction of three types of factors: (1) the demographic characteristics of the target population (the "D" of "DUC"), (2) the projected utilization rates for that population ("U"), and (3) the projected cost per unit of service for each of the utilization categories ("C").

3. Chapter 4: FFS Maximum. This chapter describes alternatives for calculating the per capita cost under fee-for-service (FFS) Medicaid for a population actuarially equivalent to each HMO's Medicaid enrollees. We refer to this figure as the FFS maximum because, under Federal regulation, prepaid capitation rates can be no higher than the equivalent per-capita cost under fee-for-service.

4. Chapter 5: Commercial Rate Maximum. Federal regulation also implies that Medicaid rates for an HMO cannot exceed the HMO's commercial rate, adjusted for "actuarial equivalence." This chapter discusses the technical issues involved in attempting to apply this principle.

5. Chapter 6: Rate-Setting Methods. In this chapter we describe three methods for setting rates: Cost modeling, budget modeling, and commercial rate adjustment. The cost modeling method is illustrated in detail; the other two are discussed with enough specificity to permit a single state agency to adapt them as well.

6. Chapter 7: Adjustment Factors. In this chapter we describe methods that may be used to adjust for factors that influence the cost or risk of a Medicaid-contracting HMO but that are not captured explicitly in the rate-setting calculations. Three types of adjustment are illustrated: (1) age and sex--adjusting (a) the FFS maximum and (b) a set of standard rates to match the age and sex distributions of an HMO's Medicaid enrollees; (2) Medicare coverage--adjusting the FFS maximum related to those aid categories for which a proportion of the beneficiaries have Medicare coverage as well as Medicaid benefits; and (3) incentive adjustments--using increments in the capitation rate as a financial incentive toward higher-than-minimum performance. The chapter concludes with a discussion of the issue of biased selection.

7. Chapter 8: Risk Sharing. This chapter is a brief discussion of risk-sharing concepts. A new concept, labeled "factor-specific risk," is introduced and illustrated. Factor-specific risk is the method for placing the HMO at risk for those factors, and only those factors, which it reasonably can be expected to control.

8. Chapter 9: Administration. In the final chapter we discuss the major issues associated with implementing prepaid rate setting as a routine administrative function: Data collection, the use of a consulting actuary, monitoring the accuracy of predictions, and the interaction between rate setting and contract amendment procedures.

In summary, then, Chapters 2 and 3 are conceptual discussions designed to lay the foundation for description of specific methods. Chapters 4, 5, 6, and 7 describe specific techniques that can be used in rate-setting analysis. Chapter 8 is again conceptual in nature, representing a potential extension of rate-setting techniques into risk-sharing reimbursement arrangements. And Chapter 9 discusses major implementation issues.

Finally, the book has the following two appendices:

1. Appendix 1: Medi-Cal Budget Projection Method. This appendix describes the technique used by the California Department of Health to predict monthly expenditures in its Medicaid program. This technique can be adapted for one element of prepaid rate setting--calculation of the FFS maximum--and for some states it may have utility as a more accurate form of program budgeting than is now being used.

2. Appendix 2: Prepaid Health Plan Reporting Requirements. This appendix contains the reporting format presently required of Medicaid-contracting HMOs in California, plus notes on the technique used by the Department of Health to audit the quality of data reported.

CHAPTER 2: CONCEPTS AND ISSUES

The Federal regulations that govern Medicaid agency contracts with HMOs set forth the following provisions for establishing capitation rates:

1. "...The single state agency will document the basis of computation of the premium rates or subscription charges it negotiates with the contractor or, if these rates or charges are fixed by the single state agency without negotiation, it will document the basis for computation of these fixed rates or charges" (CFR 249.82).

2. The state will "specify the actuarial basis for computation of the premium rate or subscription charge specified in the contract" (CFR 249.82).

3. "...The premium or subscription charge must be reasonable, and may not exceed the amount set forth in Section 250.30 of this chapter" (Section 249.82).

4. "The upper limit for payment for services provided on a prepaid capitation basis shall be established by ascertaining what other third parties are paying for comparable services under comparable circumstances. The cost for providing a given scope of services to a given number of individuals under a capitation arrangement shall not exceed the cost of providing the same services while paying for them under the requirements imposed for specific provider services" (CFR 250.30).

The California Welfare and Institutions Code is more specific with regard to the manner in which the state shall establish rates for Medicaid-contracting HMOs:

> The Department shall determine, by actuarial methods, prospective per capita rates of payment for services provided under this chapter for Medi-Cal beneficiaries enrolled in a prepaid health plan. The rates of payment shall be determined annually, shall be effective no later than the 1st day of July each year, and shall not exceed the total per capita amount (including cost of administration) which the Department estimates (with appropriate adjustments to provide actuarial equivalence) would be payable for all services and requirements covered under the prepaid health plan contract if all such services and requirements were to be furnished to Medi-Cal beneficiaries. ...The per capita rates shall be determined by sound actuarial methods on the basis of age, sex, and aid categories. The contract shall provide the specific per capita rates which the state shall pay the prepaid health plan each month for each beneficiary enrolled in the prepaid health plan, a detailed

> description of the specific actuarial method or methods and assumptions used in determining per capita rates, and a summary of the data base, including cost and utilization rates, which was used to determine per capita rates. In addition, the director shall engage and rely upon the services of an actuary or consulting actuary* in determining prospective per capita rates. (Section 14301, California W&I Code)

These requirements of Federal regulation and California state law can be summarized as follows: The capitation rates for Medicaid-contracting HMOs shall be (1) actuarial, (2) reasonable, (3) related to the HMO's commercial rate, and (4) not more than the equivalent per capita cost would be if paid on a fee-for-service basis. We will now consider the issues associated with each of these four requirements.

"Sound Actuarial Methods"

The Federal regulations quoted above require the state to specify the actuarial basis on which a capitation rate is computed, but leave open the question of what would be an acceptable actuarial method. It appears that there is no legal definition of "actuarial," and common dictionary definitions are too broad to be translated into specific methods.

The California W&I Code quoted above makes the stronger statement that the rates are to be determined by "sound actuarial methods," and while this phrase is not given complete definition there is reference to the use of age, sex, and aid categories. This language was added to the W&I Code recently, after five years of experience with California's Prepaid Health Plan program. During those five years the California Department of Health was continually criticized for not using actuarial methods to determine rates to be paid to PHPs. The Department's usual response was that the rates were indeed set by actuarial methods, if actuarial is used in the broadest meaning of manipulating statistics.

The question of the meaning of actuarial, then, is by no means trivial. A major purpose of this document is to give substance to our interpretation of the meaning of "sound actuarial methods"; at this point we will make only a few additional comments in order to lay the groundwork for what is to come.

In this context, we define "actuarial" as follows:

> Actuarial analysis is a process of predicting the number of dollars that will be needed to supply a target population with necessary

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*In requiring the Department to rely upon the services of an actuary, the legislature intended to assure that the Department would use sound actuarial methods. See Chapter 9 for recommendations on using an actuary.

> health services (within a specified scope of benefits). In practice, this usually involves taking into account the utilization-relevant attributes of the target population, the rates at which we expect the population to use the services, and expected costs per unit of service.

Obviously, actuarial analysis is highly probabilistic, with probability being used in both a formal sense (e.g.: a trend line developed by regression analysis) and an informal sense (e.g.: the chance that Congress will put a legal cap on allowable hospital cost increases). An actuary working for an HMO hedges against uncertainty by estimating on the high side, but constraining this upward inclination in order to maintain a competitive premium rate. An actuary working for the state has the opposite motivation--he tends to use assumptions that result in lower rates to assure that the state is a prudent buyer. His downward inclinations are constrained by, first, the need to keep rates high enough to attract contractors and, second, awareness that low rates may put enrollees at risk for poor quality care.

While their perspectives are different, both actuaries should be able to state the assumptions used in the rate calculation. These are assumptions quantitatively expressed: Predicted size and demographic mix of the target population, predicted utilization rates for various categories of service, and predicted costs per unit of service, and/or aggregations of these factors. In this discussion we will use the phrase "actuarial assumptions" to refer to the values of these factors that, when multiplied together, result in a capitation rate. In Chapter 3 we describe a general-purpose conceptual model for quantifying these factors.

Reasonableness

"Actuarial" is ambiguous; "reasonable" is more so. We can back into a workable definition by observing that a rate-setting method cannot be reasonable unless it provides a framework within which the state and the HMO can reason with each other. This is saying again that the actuarial assumptions, and their supporting evidence, should be explicit. For example, if a proposed capitation rate assumes (either implicitly or explicitly) that the hospital utilization rate for AFDC will be 400 days per 1,000 members per year, then that fact and the reason for choosing 400 days should be stated.

A reasonable actuary can also be expected to state an acceptable range of fluctuation in his assumptions and be prepared to demonstrate the sensitivity of his rate calculation to deviations from his actuarial assumptions. This means statements of the form "if the hospitalization rate is as high as 500 days per 1,000, the capitation rate should be increased by $1.10." Obviously, deviations are more tolerable for those actuarial assumptions related to factors where expected utilization rates or unit service costs (consultations, for example) are low than for those costs (hospital inpatient, for example) that are high.

One principle of reasonableness, which we will illustrate in Chapter 6, is the use of a variety of information sources and a variety of rate calculation methods, rather than relying entirely on one set of data and one method. For example, the Medicaid capitation rate for an HMO should be checked against the HMO's commercial rate, with suitable adjustments for scope of services and demographic mix of the two populations. If the Medicaid rate comes out higher than the commercial rate, the reasonableness of the Medicaid rate would be brought into question. Regardless of the primary method of rate calculation, a competent actuary will use as many benchmarks as possible to assure himself and others that the rate makes sense.

Actuarial work is often as much art as science, because the actuary is forced to deal with information resources that are incomplete and only tenuously related to the phenomena he is attempting to predict. Information gaps must be bridged with rhetoric, which makes "reasonableness" even more subjective. As we proceed through realistic examples of rate-setting calculations in subsequent chapters, this dilemma will become clear. (See Chapter 9 for a discussion of data collection problems, with recommendations for the types of data that are necessary to assure reasonableness.)

The final judge of reasonableness, of course, is the future--the relationship between the predictions made while calculating the capitation rate and what turn out to be the actual per capita costs. On the basis of this criterion, actuarial methods deemed reasonable may be very simple indeed. When Sasuly and Hopkins were documenting the experience of the San Joaquin Foundation, they found that "with the passage of years underwriters have become less demanding of specific actuarial information such as age distributions and number of dependents involved. No mechanism is maintained by the carrier, the foundation, or the group to keep a count of the number of primary insured, let alone their dependents."*

The years of experience of the California PHP program, however, have brought increasing demand for actuarial specificity. We have just noted, for example, the recent addition to law of the requirement for basing the rate on, at minimum, age, sex, and aid category factors. This modification to the law was sponsored by the HMO industry to protect the plans from what were considered to be imprecise rate-setting methods on the part of the state. As a Medicaid-contracting HMO finds itself caught between the general inflation in the health care field and the inclination of the state to minimize its expenses, a rate-setting method that once was deemed to be reasonable may no longer be considered to have sufficient predictive accuracy.

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*Sasuly R and Hopkins CE: A medical society-sponsored comprehensive medical care plan, the Foundation for Medical Care of San Joaquin County, California. Medical Care 5:234, July-August 1967.

In fact, under conditions of a rapid rate of inflation--taken together with the usual deficiencies in quantity and quality of data--there may be no rate-setting method that is reasonable in the sense of protecting the Medicaid-contracting HMO from undue risk. This leads to consideration of risk-sharing arrangements, in which the State and the HMO, mutually recognizing that there is insufficient ability to predict future costs accurately, agree to share the possible adverse financial effects from higher-than-expected utilization of services or cost per unit of service. (For more on risk-sharing concepts, see Chapter 8.)

Relationship to HMO Commercial Rate

The Federal regulation quoted at the beginning of this chapter requires "...ascertaining what other third parties are paying for comparable services under comparable circumstances," as part of the process of establishing the upper limit for a Medicaid capitation rate. The phrase "what other third parties are paying" can be interpreted to mean the HMO's commercial rate (or rates, since there may be more than one coverage plan, each with its own rate).

The phrase "comparable services" specifies the sensible requirement that comparison between a Medicaid rate and a community rate must adjust for any difference in benefits. The phrase "under comparable circumstances" can be interpreted to mean that there should also be adjustment for demographic differences between the Medicaid beneficiary population and the HMO's "community population"--differences that affect utilization and, thus, costs.

It is not clear from the language of the regulation that the adjusted commercial rate is in fact an upper limit for the Medicaid rate. If the adjustment is done properly, the adjusted commercial rate would represent the HMO's "asking price," or the price at which it is doing business with private payors. It would be difficult for government to justify paying more than the asking price or more than the cost to private purchasers of health care.

We have already noted that comparison with an adjusted commercial rate is part of the reasonableness test for a Medicaid capitation rate; there is good reason also to consider the adjusted commercial rate an upper limit for the Medicaid rate. For this reason we devote Chapter 5 to the technique of commercial rate adjustment.

The Fee-For-Service Maximum

We use the phrase "fee-for-service (FFS) maximum" to mean the per capita cost to the state that would result if an HMO's Medicaid enrollees were to be treated under fee-for-service. As specified in the regulations, the Medicaid capitation rates cannot be set higher than this FFS-equivalent per capita cost, regardless of actuarial or reasonableness considerations.

There is sometimes a misconception about the meaning of FFS maximum, which derives from applying the concept to individual categories of service rather than to the entire scope of services. For example, one might say that if a state Medicaid agency is paying an average of $200 per hospital day under fee-for-service, the cost per hospital day that is used as an actuarial assumption in calculating an HMO's capitation rate should not exceed $200. This is an incorrect interpretation--the FFS maximum applies to the per capita cost for an entire scope of services, not to individual categories of service.

There is another nuance of meaning that may cause confusion with respect to the concept of an FFS maximum. The question is this: Does FFS maximum literally mean the per capita cost that would be realized if the HMO's Medicaid members were returned to fee-for-service? An HMO is expected to alter the utilization behavior of its members, so there is reason to believe that to some extent this changed utilization behavior would be maintained even if the HMO were no longer directly responsible for care. Ex-HMO members might have a different utilization pattern and therefore different per capita cost than a demographically equivalent population of Medicaid beneficiaries that had never been HMO members.

This is neither a feasible nor reasonable way to interpret FFS maximum. The correct definition is in terms of actuarially equivalent populations, which in turn would be defined in terms of utilization-relevant demographic factors other than HMO membership. In other words, the FFS maximum represents the estimated per capita cost for a FFS Medicaid population matched to the HMO Medicaid-member population by factors such as location, aid category, age, and sex.

There are other issues to be taken into consideration when establishing the FFS maximum, which we deal with in Chapter 4. As a limit on capitation rates, the FFS maximum has not presented a problem in California's program. In general, the capitation rates during the five years of the program's history have averaged 83 percent to 85 percent of FFS per capita cost.

Government as Purchaser of Health Care Services

The discussion to this point has been oriented largely toward technical issues of rate-setting, with the State Medicaid agency being viewed simply as a potentially large-scale purchaser of enrollment for its beneficiaries. There is a set of issues, however, that derive from the fact that a government agency has a degree of public accountability and a type of bureaucracy quite different from that of private group purchasers. Following are these issues:

1. Openness of State-HMO negotiations. The Federal regulations and, in California, state law make it clear that the state must document the data and calculations used to set rates. Under the usual freedom of information statutes, this will become public information, not just information used in closed negotiations between the State and individual contractors. One of the purposes of this requirement is to keep the entire rate-setting process publicly accountable, and thus free from favoritism. As a side effect, this also means that the state's technical competence is laid before public view. With fee-for-service provider groups, a Medicaid agency can make rather arbitrary decisions about payment rates (within the requirements of Federal regulations, of course), but with prepaid contracts the rates must have explicit justification.

2. Equity. Although not specifically required by law, the same concern about possible favoritism that mandates the openness of the rate-setting process virtually requires that rates be set in the same way for all HMO contractors. "In the same way" does not necessarily mean that all rates will be the same, of course, but it does mean that there are certain standard parameters that remain the same for all contractors and that (in theory at least) are set without regard to any one specific plan. For example, it would be equitable to have a policy that allows in the capitation rate a higher administrative cost allowance for the first year of a Medicaid contract than for subsequent years, but it would not be equitable to arbitrarily alter the rate for one new contractor without altering it for all new contractors.

3. The contract approval process. Most state governments have rather elaborate procedures for review and approval of contracts let by any state agency, including the Medicaid agency. In California, for example, it would be rare for a contract of substantial size to be approved in less than 4 months. Also Federal regulations require DHEW approval of any contract under Medicaid in which the expenditure will exceed $100,000--a requirement that will apply to virtually all Medicaid contracts with HMOs. Contracts ordinarily do not exist with fee-for-service providers (except in the limited sense that a provider agreement can be considered a contract), and even if

they did they would be much simpler contracts than those with HMOs. In the California experience, the contract approval process has proven to be a significantly cumbersome adjunct of rate changes.

4. Program budgeting. Ideally, the budget amount for a Medicaid agency's HMO program would be derived from the rate-setting process; that is, the budget would be an aggregation of the rates (multiplied by projected enrollment levels) plus the agency's own related administrative costs. However, the state budget-setting cycle and the HMO rate-setting cycle may not permit this relationship; the aggregate budget amount may have to be established before individual rates are set. (See Chapter 9 for additional information on rate-setting and the budgeting process.)

Summary

In this chapter we have discussed briefly the concepts and issues associated with establishing capitation rates for prepaid Medicaid contracts. This discussion lays the foundation for the remaining chapters, which are methodological in content.

CHAPTER 3: A CONCEPTUAL MODEL

The purpose of this chapter is to describe a conceptual model that will serve as a framework within which, in subsequent chapters, to consider various technical issues related to rate-setting. The model begins with the simple premise that predicting the cost of health care services for a target population requires consideration of the following three major factors:

1. Demographic characteristics of the target population. In this context, we use "demographic" to mean those attributes of the population--for example, age distribution--that are considered to be predictors of utilization of health care services.
2. Utilization rates for each category of service. Each utilization rate would be expressed in terms of members of a demographic class; for example: "hospital days per month per 1,000 females age 15-34 years."
3. Cost per unit of service; for example: "dollars per hospital day."

The DUC Model

From the initials of these three factors--demographics, utilization, and cost--we derive the label "DUC model." The model describes the interaction of the three factors, which can be summarized simply as follows: demographic projections lead to utilization projections, which in turn lead to cost estimates, which aggregate to a single capitation rate.

Example

In order to clarify the logic of the DUC model, we will take as an example a hypothetical HMO that offers (in order to keep our calculations simple) only three types of services: physician visits, prescription drugs, and inpatient hospitalizations. Also for simplicity we will use only four demographic subdivisions: males 0-12, males 13 and older, females 0-12, and females 13 and older.

Illustration 3-1 on the following page contains the values we posit for the D, U, and C factors. (Incidentally, although this is a purely hypothetical example, the utilization rates and unit service costs used are realistic in terms of recent California PHP experience.)

In order to translate these figures into a single capitation rate, we will first find the number of units of service for each of the three categories of service. Following is the calculation to be done for physician visits:

Illustration 3-1: Examples of Demographic, Utilization, and Cost Statistics

A. Demographic Mix (D)

	No. of Members
1. Males, 0-12	5,000
2. Males, 13+	2,500
3. Females, 0-12	5,000
4. Females, 13+	7,500

B. Utilization Rates (U)

	Units Per 1,000 Members Per Month		
D Category (1)	Physician Visits (2)	Prescriptions (3)	Hospital Days (4)
1. Males, 0-12	323	273	33.5
2. Males, 13+	296	295	23.0
3. Females, 0-12	241	227	28.4
4. Females, 13+	409	854	103.9

C. Cost (C)

	Physician Visits	Prescriptions	Hospital Days
Cost per unit of service	$9.77	$4.41	$225

1. Males, 0-12: 323 visits per 1,000 members per month multiplied by 5,000 members equals 1,615 visits per month.
2. Males, 13+: 296 X 2.5 = 740 visits per month.
3. Females, 0-12: 241 X 5.0 = 1,205 visits per month.
4. Females, 13+: 409 X 7.5 = 3,068 visits per month.
5. Sum of above is 1,615 + 740 + 1,205 + 3,068 = 6,628 visits per month for entire membership.

Illustration 3-2 shows similar calculations for the other two categories of service.

Illustration 3-2: Calculating Units of Service for "Prescriptions" and "Hospital Days"

D Category	No.	Prescriptions		Hospital Days	
		Rate	Units	Rate	Units
(1)	(2)	(3)	(4)	(5)	(6)
1. Males, 0-12	5,000	273	1,365	33.5	168
2. Males, 13+	2,500	295	738	23.0	58
3. Females, 0-12	5,000	227	1,135	28.4	142
4. Females, 13+	7,500	854	6,405	103.9	779
Total	20,000		9,643		1,147

The next step is converting total units into cost, by multiplying by the costs per unit of service. These calculations are shown in Illustration 3-3.

Illustration 3-3: Calculating Total Costs

U Category (1)	Units of Service (2)	Cost Per Unit (3)	Total Cost (4)
1. Physician Visits	6,628	$9.77	$ 64,756
2. Prescriptions	9,643	4.41	42,526
3. Hospital Days	1,147	225.00	258,075
Total			$365,357

Our hypothetical D, U, and C factors thus multiply together to give us a predicted total cost of $365,357 per month. Dividing by the total membership converts this to a per capita cost: $365,357 ÷ 20,000 = $18.27 per month.

*The DUC Model in Mathematical Notation**

In the above example we have used only four demographic categories and three categories of service. In order to generalize the model to more categories, we will use the following symbolism:

1. Let d_i represent the number of members in demographic category i, and let r represent the number of demographic categories. Then N, the total number of members, is given by $N = \sum_{i=1}^{r} d_i$.
2. Let u_{ij} represent the utilization rate for demographic category i and service category j. Let k represent the number of categories of service.
3. Let c_j represent the cost per unit of service for service category j.

With these symbols we can easily express the calculations just carried out for the example, as follows:

1. Finding the units of service for each category of service:

   $\sum_{i=1}^{r} d_i u_{ij}$ = units of service for category j.

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*The non-mathematically inclined reader may elect to skip this section. The essential concepts in subsequent sections are not dependent on the notation introduced here, although occasional reference will be made to it.

2. Finding the cost for each category of service:

$$\left(\sum_{i=1}^{r} d_i u_{ij}\right) c_j = \text{cost for category } j.$$

3. Finding the total cost:

$$\sum_{j=1}^{k} \left(\sum_{i=1}^{r} d_i u_{ij}\right) c_j$$

4. Finally, the per capita cost is given by:

$$\frac{\sum_{j=1}^{k} \sum_{i=1}^{r} d_i u_{ij} c_j}{\sum_{i=1}^{r} d_i}$$

(The DUC model can also be visualized as a vector of d_i values, a matrix of u_{ij} values, and a vector of c_j values. "DUC" then represents a matrix product.)

Administrative Costs

As described above, the DUC model relates to health care costs, but does not include explicit factors for administrative cost. The usual practice in rate-setting, even when detailed estimates of utilization rates and unit service cost have been used in the fashion described above, is to consider the HMOs administrative costs as an aggregate figure, added after the per capita health care costs have been computed. In essence, this means that the administrative costs are being allocated equally to all demographic categories and all categories of service.

In theory, the DUC model permits other options for including administrative costs in the overall capitation rates. For example, it may be decided that certain administrative costs are proportional to utilization rates. In this case, administrative costs might be built into the costs per unit of service values used for each category of service (in the mathematical notation above, the c_j values). The effect of this approach would be to identify a per capita administrative cost that varies from one demographic category to another, in the same way that utilization varies from one category to another. If significant variation in demographic mix is anticipated for the HMO, treating administrative costs in this way could yield a more accurate prediction of overall per capita costs.

On the other hand, certain administrative costs--the cost of marketing and enrollment would be a good example--may be considered to vary with demographic categories, but independently of utilization of health care services. It would be possible within the structure of the DUC model to introduce these costs as an artificial combination of a "utilization rate" and "cost per unit of service." In our mathematical notation, this would be a product $u_{ij}c_j$, where the j now indicates a category of administrative expense rather than a category of health care service. An example would be to introduce into the model a figure of $1.50 per month for each AFDC beneficiary, $2.00 per month for each ATD beneficiary, etc.

Information-Generating Processes

Illustration 3-4 presents another visualization of the DUC model, in which we have separated the three information-generating processes--demographic, utilization, and cost--from the three data sets they produce, which are necessary to carry out the mathematical calculations of the model. Our purpose is to clarify the following points:

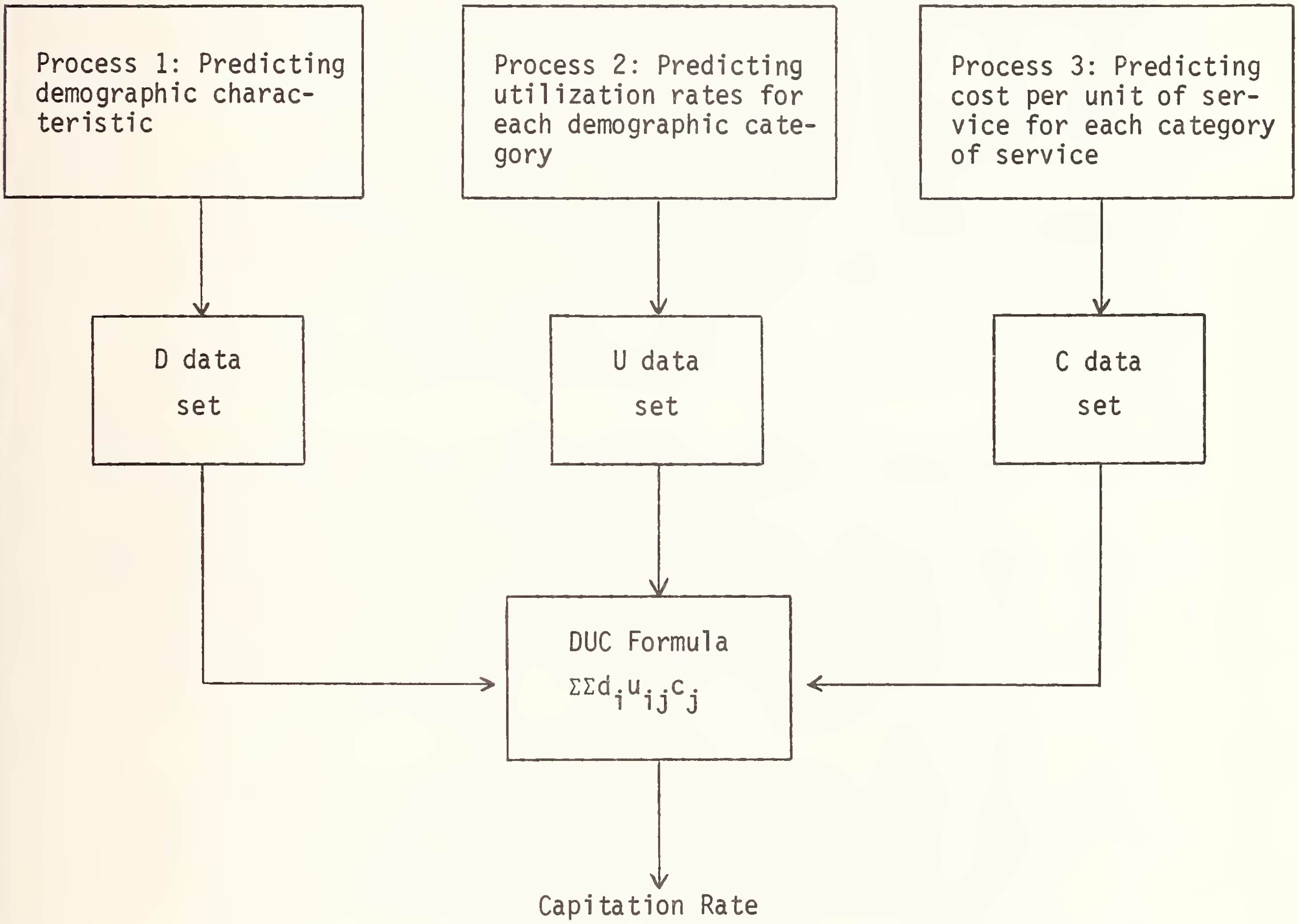
1. The information-generating processes may be carried out independently of one another. Obviously, for the resulting capitation rate to have meaning these processes must be relevant to one another, but in terms of the technical requirement of a DUC model they interact only in terms of data sets they produce.

2. The model does not need to know where the data sets came from in order to produce a capitation rate. The only requirements are that (a) the number and definition of demographic categories agree between the D data set and the U data set, and (b) the number and definition of categories of service agree between the U data set and the C data set.

3. Therefore, it is possible to generate alternative capitation rates by varying the information-generating processes. For example, the potential impact of variations in demographic mix can be assessed by varying that data set while holding the U and C data sets constant.

This diagram represents the essence of the DUC model: three data sets produced by independent processes that, when multiplied together by a simple mathematical method, produce a prediction of per capita health care costs.

Illustration 3-4: The DUC Model As An Information-Gathering Process


Process 1: Predicting demographic characteristic
Process 2: Predicting utilization rates for each demographic category
Process 3: Predicting cost per unit of service for each category of service
D data set
U data set
C data set
DUC Formula
$\Sigma\Sigma d_i u_{ij} c_j$
Capitation Rate

Utility of the DUC Model

The justification for the conceptual exercise we have gone through in this chapter so far is our conviction that a wide variety of HMO rate-setting techniques can all be interpreted in terms of the DUC model. The demographic, utilization, and cost factors that this model makes explicit are at least implicit in all rate-setting methods. For example, an assumption stated in terms of cost per member per month of hospital services can be understood in the DUC model to represent the product of two unstated values for hospital days per thousand members per month and cost per hospital day.

The value of the DUC model, then, is that it provides both (a) a set of concepts that can be useful in understanding the common ground for alternative rate-setting approaches, and (b) a mathematical structure which can deal with data from a variety of sources. In subsequent chapters, as we proceed through examples of data manipulations for rate-setting purposes, we will interpret these manipulations in terms of the DUC model. For the moment, the following are examples of how the model can be used:

1. Calculating the fee-for-service maximum. As defined in Chapter 2, the fee-for-service maximum (the maximum amount at which a state Medicaid agency can set the capitation rate it will pay to an HMO) means the expected per capita cost of supplying a full scope of services under fee-for-service, to a population of Medicaid beneficiaries with the same demographic mix as the Medicaid members of HMO. In terms of the DUC model, the FFS maximum would be calculated by using the D data set from the HMO in question, but using a U data set and a C data set generated from fee-for-service experience.

2. Incorporating empirical standards in the rate. The C data set, for example, may be constituted of 75th percentile values. That is, for each category of service, the unit service cost used in computing the rate may represent the 75th percentile of the unit service costs reported by a group of HMOs.

3. Incorporating normative standards. For certain categories of service, such as screening for children, the state may set a minimum performance requirement. Some of the values in the U data set, then, will be based not on past performance, but on future expectation. The capitation rate then would properly represent the HMO's cost in meeting these expectations (and the state would of course want to monitor to be sure that the minimum performance standard had been met).

4. Monitoring. When the DUC model is used to set a capitation rate prospectively, the data sets all represent predicted values. During the course of the contract period the model can also be used to compare the effects of the predicted values with actual experience. For example, by substituting actual D values for the predicted D values, but retaining the predicted U and C values, the effect of predictive inaccuracy in the demographic factors can be assessed.

5. Factor-specific risk-sharing. Since the D, U, and C data sets are all stated explicitly, it would be possible to establish a risk-sharing arrangement that protects the HMO from significant predictive inaccuracy in any one or two of these factors. For example, a 10% risk corridor could be established for each of the U values. This concept of factor-specific risk-sharing is discussed more completely in Chapter 8.

Practical Application of the Model

Any application of the DUC model requires specification of (a) demographic categories and (b) categories of service. In general, there are two considerations which determine how these categories are specified in practice:

1. The availability of data. It is pointless to specify categories for which data are not obtainable. For example, family size is generally considered to be a relevant predictor of use of health care services, but in most Medicaid programs the accumulation of utilization statistics by family size categories is difficult, if not impossible.

2. Complexity of data manipulations. The DUC model calls for a utilization rate to be specified for each combination of demographic category and category of service, and it is easy to see that this easily can grow into a large number of combinations. For example, if for "demographic mix" we were to use four aid categories, five age groups, and the two sex groups, we would have a total of 4 X 5 X 2 = 40 demographic categories. If we were to use 25 categories of service, we would then have to specify 40 X 25 = 1,000 utilization rates in the U data set.

In theory, a high degree of specificity in the demographic categorization and in the categories of service will produce more accurate capitation rates ("more accurate" means the capitation rates are more likely to agree with per capita costs actually experienced during the contract period). However, the greater number of categories that are used, the greater is the cost associated with obtaining and manipulating the data necessary to calculate the capitation rate. A fundamental dilemma for the rate-setter, then, is to find the optimum compromise between specificity and practicality, given the data resources readily available.

In subsequent chapters we will represent what we consider to be a practical application of the DUC model given the data resources likely to be available in most Medicaid programs. In these chapters we will define the demographic and utilization categories that have proven to be practical in the context of California's Medicaid program, which we consider to be neither the worst nor the best in terms of ability to acquire and manipulate health services data.

CHAPTER 4: FFS MAXIMUM

We use "FFS (fee-for-service) maximum" to designate the per capita cost under fee-for-service Medicaid of a population actuarially equivalent to an HMO's Medicaid enrollees, for the same scope of services. This is labeled a maximum because it represents the upper limit for a capitation rate under current Federal regulation.

Following are the implications of this definition:

1. The FFS maximum has meaning only when defined for each HMO, since it must be calculated in terms of "actuarial equivalence" with that HMO's Medicaid enrollees. (In practice, a FFS maximum would be calculated for each portion of the Medicaid enrollee population for which rates are determined. In California, for example, this would mean a FFS maximum for each of the four aid categories AFDC, ATD, OAS, AB.)

2. The meaning of "actuarially equivalent" is obviously of critical importance. Our operational definition of actuarial equivalence will be discussed below.

3. Establishing equivalence in terms of scope of services is also an essential part of the definition of FFS maximum. This is another topic to be discussed in this chapter.

4. Implicit in the definition of FFS maximum is the fact that it requires predicting a per capita cost on the basis of data from past experience. This chapter will discuss the use of fee-for-service paid claims data to predict future utilization rates and unit service costs.

1. Establishing Actuarial Equivalence

Method 1: Direct Comparison

In Chapter 3 we used the phrase "demographic factors" (the D of the DUC Model described there) to label those attributes of a population which are considered to be relevant to need for, and/or use of, health care services. For example, age is obviously such a factor--the very young and the very old use more health care than those in the middle age group, all else being equal;* women of child-bearing age use more services than men in the same age range; and so forth.

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*Ceteris paribus--"all else equal"--is a phrase commonly used by econometricians, who are more advanced than actuaries in the employment of Latin phrases to legitimize simplifying assumptions.

There are undoubtedly a long list of attributes that have some degree of relevance to health care utilization, and thus are demographic factors in the sense used here. One of the objectives of actuarial analysis is to find a reasonable balance between (1) using many such factors in order to increase predictive accuracy, and (2) using few such factors in order to keep the analytical task as simple as possible.

We consider aid category, age, sex, and geographical location to be the requisite minimum set of demographic factors to be used for Medicaid populations, without precluding the possibility that additional factors may also be important enough to be worth the cost of including in the analysis. Two commonly espoused factors are family size and socioeconomic status, since these have been shown to be relevant to health service utilization. However, family size is usually not readily available in Medicaid programs, and the effects of family size are partially taken into account with age/sex adjustment. Medicaid eligibility is in itself a socioeconomic indicator, although there may be useful socioeconomic gradations within the Medicaid population.

Two populations would be considered actuarially equivalent if they are the same, or very nearly the same, with respect to demographic factors--age distribution, sex distribution, aid category distribution, etc. Conceptually, calculation of the FFS maximum for an HMO requires finding the per capita cost for a Medicaid population that is similar with respect to such factors, but receives care under fee-for-service. It is not necessary literally to identify such a group of Medicaid beneficiaries, of course, since the necessary comparison population can be simulated statistically.

Illustration 4-1 on the following page illustrates this simulation. (We are again using a simplified example, with only four demographic categories and three categories of service.) Here we see that fee-for-service utilization and cost statistics have been calculated for each demographic category, then matched with the HMO's distribution of Medicaid members among these demographic categories. The final result is an estimate of the per capita cost that would be expected for a population with these demographic characteristics, if care were rendered under fee-for-service. This number is not quite the FFS maximum--it may need adjustment for differences in scope of service and other factors which will be discussed presently--but it will usually turn out to be close to the final value.

This calculation of the fee-for-service per capita cost can be expressed concisely in terms of the DUC Model. If D_H represents the demographic mix of the HMO's Medicaid members, and U_F and C_F represent fee-for-service utilization and cost factors, respectively, the fee-for-service cost for an actuarially-equivalent population is given by $D_H U_F C_F$. Once the data necessary to do this calculation have been assembled, it may be of interest (although not strictly required for rate-setting) also to calculate the following variations:

			Males, 0-12 (1)	Males, 13+ (2)	Females, 0-12 (3)	Females, 13+ (4)
Fee-For-Service	1.	Physician visits				
		a) Visits/1,000 e-m	301	287	239	410
		b) Cost/visit	$12.32	$12.32	$12.32	$12.32
		c) Cost/e-m	$ 3.71	$ 3.54	$ 2.94	$ 5.05
	2.	Prescriptions				
		a) Rx/1,000 e-m	270	291	243	871
		b) Cost/Rx	$ 5.75	$ 5.75	$ 5.75	$ 5.75
		c) Cost/e-m	$ 1.55	$ 1.67	$ 1.40	$ 5.01
	3.	Hospital inpatient				
		a) Days/1,000 e-m	52.1	31.3	43.7	142.9
		b) Cost/day	$310.00	$310.00	$310.00	$310.00
		c) Cost/e-m	$ 16.15	$ 9.70	$ 13.55	$ 44.30
	4.	Total cost/e-m (1c + 2c + 3c) ...	$ 21.41	$ 14.91	$ 17.89	$ 54.35
Example HMO	5.	No. of members	5,000	2,500	5,000	7,500
	6.	Cost at FFS rates	$107,050	$37,275	$89,450	$407,625
	7.	Aggregate cost	$641,400			
	8.	Per capita cost at FFS rates	$641,400/(5,000 + 2,500 + 5,000 + 7,500) = $32.07			

Notes: 1) "e-m" = eligible month
2) cost/e-m = [(units/1,000 e-m) X (cost/unit)]/1,000

Illustration 4-1: Calculation of fee-for-service per capita cost for demographic mix of an example HMO; AFDC aid category.

1. Comparing $D_H U_F C_F$ with $D_F U_F C_F$ gives a measure of the extent to which demographic differences between the HMO and the local fee-for-service population affect per capita costs.
2. Comparing $D_H U_H C_F$ with $D_H U_F C_F$ gives a measure of the extent to which utilization differences between the HMO and fee-for-service produce different per capita costs.
3. Comparing $D_H U_H C_H$ with $D_H U_H C_F$ gives a measure of the extent to which differences in unit costs produce a difference in per capita cost.

Method 2: Adjustment Factor

There is an alternative approach to simulating actuarial equivalence between the HMO and fee-for-service populations that is less accurate but computationally simpler and less expensive. We refer to this alternative as adjusting the fee-for-service per capita cost for actuarial differences. The adjustment technique is described in detail in Chapter 7, where we show how it can be applied to both the FFS maximum and the rates. The sense of it can be understood from the following example:

1. Assume the AFDC rate for a given HMO is $35.00 per member per month.
2. Assume that we find the per capita cost for AFDC beneficiaries under fee-for-service in the same area to be $38.00. (We have controlled for aid category and geography by selection, but we have not taken into account possible age and sex differences.)
3. Assume that we know the age/sex distribution for both the HMO and the fee-for-service beneficiaries, and that we can calculate an index for each of the two distributions that represents the extent to which the distribution is expected to be more expensive or less expensive than an "average" age/sex distribution. For example, if the usual AFDC population has 30% of its members in the group "females, age 13-44" (a group which has high utilization of health services) but the HMO has 35% in this group, the index for the HMO would probably be greater than 1.00, representing higher than average expected cost. (Calculation of this type of index is explained in Chapter 7.)

4. Assume that for the HMO the index of expected cost is 1.10, indicating that the HMO's age/sex distribution is, in general, about 10% more costly to serve than the average. Assume that the fee-for-service AFDC beneficiaries in the same service area have an age/sex distribution that produces an index of 0.98, indicating a somewhat less than average expected cost.

5. The ratio of these two indexes can be used to adjust the fee-for-service per capita cost to the HMO age/sex distribution, as follows:

$$\$38.00 \times \frac{1.10}{0.98} = \$42.65$$

   In effect, dividing the original $38.00 by 0.98 raises the fee-for-service per capita cost up to what it would be for an average age/sex distribution; then multiplying by 1.10 raises it further to what it would be for an age/sex distribution like that of the HMO.

Note that this method does not require tabulation of fee-for-service utilization rates and unit costs by age and sex category. It does require the fee-for-service per capita cost by aid category and service area (which, in practice, usually means county), but these statistics are usually readily available in Medicaid programs. The method also requires statistics that reflect the relative cost of age and sex categories (see Chapter 7), but these relative costs are constant enough that such statistics need be generated only once every two or three years.

The data processing requirements for this alternative approach, then, are considerably less than with the explicit $D_H U_F C_F$ calculation. However, the $D_H U_F C_F$ calculation is the more accurate method of estimating a fee-for-service cost with actuarial equivalence. Whether the reduction in cost of calculation is worth the loss of accuracy will depend primarily on how close the HMO rates are to fee-for-service per capita costs. In California, the rates under Medicaid contracts are generally less than 85% of the estimated fee-for-service per capita costs, and it is clear that the less precise but less costly adjustment method can be used to calculate the FFS maximum without undue concern about measurement error. If your rates turn out to be 90% or more of the fee-for-service per capita costs, then consideration should be given to using the more accurate method of calculating those costs.

2. Adjusting for Differences in Scope of Services

Most Medicaid programs provide a broad spectrum of services to their beneficiaries, and the intent of a Medicaid contract with an HMO will be that all of these services be available from the HMO. There may be exceptions to this principle, however; the HMO may be exempted from certain services, or, on the other hand, the HMO may be required to carry out a function--either a health care service or an administrative requirement--that is not being purchased by the fee-for-service dollar. The FFS maximum needs to be adjusted to take into account any such differences.

The number and types of adjustments to be made for factors such as these will depend on policy details within each Medicaid program. We will list here the adjustments appropriate for California's Medicaid contracts with HMOs.

Following are the factors that may adjust the FFS maximum downward:

1. A Medicaid-contracting HMO in California may elect not to provide dental services. (With this single exception, all of the usual Medicaid benefits are required of contracting HMOs.) For any HMO that does not provide dental services, the FFS maximum is reduced by the per capita cost of dental care under fee-for-service.

2. For all Medicaid-contracting HMOs in California, there is a risk limit of $10,000 per year for any one member. If the cost of health services rendered to any member exceeds $10,000 during the contract year, the services beyond the $10,000 limit are reimbursed on a fee-for-service basis, at usual Medicaid rates. The estimated per capita costs (beyond $10,000) are subtracted from the FFS maximum. Following are the amounts by which the FFS maximum was reduced in calculating FFS maximums for FY 77-78 rates:

AFDC	$ 0.99 per eligible-month
ATD	$ 8.31
OAS	$ 0.22
AB	$ 3.09

Following are factors that may adjust the FFS maximum upward:

1. When a child is born to a Medicaid beneficiary enrolled in an HMO, the HMO cannot receive a capitation payment for the child until Medicaid eligibility of the child is officially determined. This means that the HMO is liable for health care costs that occur between the date of birth and the first day of official eligibility, an interval that averages about six weeks. (Children born in the latter half of a calendar month are too late to be included in eligibility transactions effective the first of the next month.) In fee-for-service a

newborn is automatically eligible, with services billed under the mother's ID number until a separate card is issued. The cost of this added exposure for the HMO was estimated at 50¢ per member-month during the FY 77-78 rate-setting analysis. In order to make the rates and the FFS maximum comparable, this amount was added to the FFS maximum.

2. The California Medicaid contract with HMOs requires the HMO to undertake a positive effort to bring children in for screening services. This was expected to result in a utilization rate for such services significantly higher than under fee-for-service, where there is no such leverage possible (California relies almost entirely on voluntary efforts of private providers to meet the objectives of childhood screening). The estimated cost of the (predicted) higher screening rate for HMOs was added to the FFS per capita costs when calculating the FFS maximum.

When we move beyond the costs directly attributable to health care, we encounter debatable issues related to the proper definition of FFS maximum. One of these is the question of including the cost of fee-for-service claims processing in the calculation of the FFS maximum. The argument for including these costs is this: claims processing costs are an unavoidable part of fee-for-service health care delivery and they are not present with HMO contracts, so they should be included in the FFS maximum. The argument against including these costs in the FFS maximum usually is represented as follows: the purpose of comparing rates with FFS maximums is to assure that the per capita cost of health care under fee-for-service is not less than HMO rates; claims processing cost is part of the State's administrative cost, not a health care cost.

A related issue is the cost of HMO administrative functions that do not exist in fee-for-service. For example, in California the Medicaid HMO contract requires certain standards for medical record content, quality assurance procedures, member grievance procedures, outreach efforts, staffing standards, etc. None of these are explicit requirements of the fee-for-service provider, and there is no doubt that the HMO is realizing costs related to these functions that go beyond those of the fee-for-service provider. Should such costs be added to the FFS maximum in order to make that figure comparable to the HMO's capitation rates?

Following are our comments about these issues:

1. We have already noted that in the California program the HMO rates for Medicaid are less than 85% of the Medicaid fee-for-service per capita cost. This is without taking into account claims processing costs or the types of HMO administrative cost that are not found in fee-for-service, both of which would tend to increase the differential. For the primary

purpose of the FFS maximum, then, which is to assure that the rates are less than fee-for-service per capita costs, it obviously is not necessary to take these additional costs into account.

2. On the other hand, sensible management of a program of Medicaid contracts with HMOs requires quantification of these cost effects. Whether or not they are included in the FFS maximum, it is helpful to know the contrast in State administrative costs between prepaid and fee-for-service care, and the costs of those HMO functions which are considered to improve the quality of health care delivery but which are not found in the fee-for-service system.

3. We do not believe that the elimination of claims processing costs should be viewed as a true savings to the State. The State should be making at least as much investment in information systems for monitoring HMO contracts as it does in the processing of fee-for-service claims.

In other words, when analyzing the comparative cost to the State of HMO contracts and fee-for-service, both health care costs and administrative costs should be taken into account, including State administrative costs. This should be done for program management purposes, whether or not such costs are included in calculation of the FFS maximum.

3. Chronological Projections

The discussion up to this point has dealt with the problem of establishing comparability between an HMO and a (simulated) fee-for-service reference population, in order to compare capitation rates with per capita costs. The remaining requirement is to project the FFS maximum forward in time--to estimate what the fee-for-service per capita costs will be during the period to be covered by the HMO contract.

Conceptually, this task is nearly the same as preparing a future-year budget for the Medicaid program as a whole. States that have a budget estimation process that has proven to be accurate may well use the same analytical methods for chronological projection of the FFS maximum. Of course, the FFS maximum projection should be done for each HMO service area (or approximation thereof), rather than only for the State as a whole.

We will discuss two technical issues here, then illustrate a simple method for projecting the FFS maximum. The two issues are (1) dealing with date of service to date of payment lag times when working with paid claims data, and (2) separating utilization rates and unit service costs when making projections.

Service-to-Payment Lag Time

The problem of service-to-payment lag time is familiar to all analysts who have worked with paid claims data. Claims paid during a given calendar month will represent services rendered over the preceding 12 months, or even longer. Even after paid claims have been sequenced by date of service, and added to a history file maintained in this sequence, that file will have incomplete representation of the more recent months.

Typically, analysts working with paid claims data solve this dilemma in one of the following three ways:

1. The analyst waits until enough time has elapsed after the latest month used in his analysis, until he believes the data file is virtually complete. For example, claims with dates of service in the interval January-December 1976 might be selected from all claims paid through December 1977, with reasonable certainty that nearly all services rendered during 1976 are represented in the paid claims file. This strategy is apt for investigating phenomena that are relatively stable, but it is of questionable utility for projecting per capita costs. The analyst would find himself in the position of using data that are several months old to make projections for a time period that will not even begin for a few more months, and predictive accuracy will suffer. We do not recommend this alternative.

2. The analyst can estimate completion factors for recent months, and use these to inflate statistics derived from claims paid to date. A completion factor is the percentage of services rendered during a given month that is believed--on the basis of knowledge of typical lag times in the claims processing system--to be represented in claims paid to date. For example, physician claims paid through the end of March 1978 might represent 90% of the physician services rendered through the end of January 1978; 90% is the completion factor for January. The advantage of this approach is that it enables the analyst to work with the most recent available data. We will discuss the calculation and use of completion factors below.

3. The analyst can work with data sequenced by date of payment rather than date of service. This also has the advantage of enabling the most recent paid claims data to be used. Also, it may be cheaper--date of service sequence is the natural sequence of data files generated by claims payment systems.*

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*Any state with an adequate Surveillance and Utilization Review System, however, will already be maintaining history files in date of service sequence as well.

> It has the disadvantage that there can be no explicit linkage made between services represented on claims paid during a given month and number of Medicaid eligibles during any definable time period, a matter of concern since we want to estimate per capita (that is, per eligible) costs. The pragmatic solution to this problem is to use eligible counts for an earlier month (say, three months before the month of payment) as if it were the proper denominator for per capita statistics. This procedure will also be illustrated below.

Method 1: Completion Factors

Illustration 4-2 on the following page shows typical growth curves for the accumulation of paid claims representing services rendered during a given calendar month (as measured by dollars paid). Three categories of service have been used for this illustration--pharmacy, physician, and hospital inpatient--but similar curves could be generated for the remaining categories.

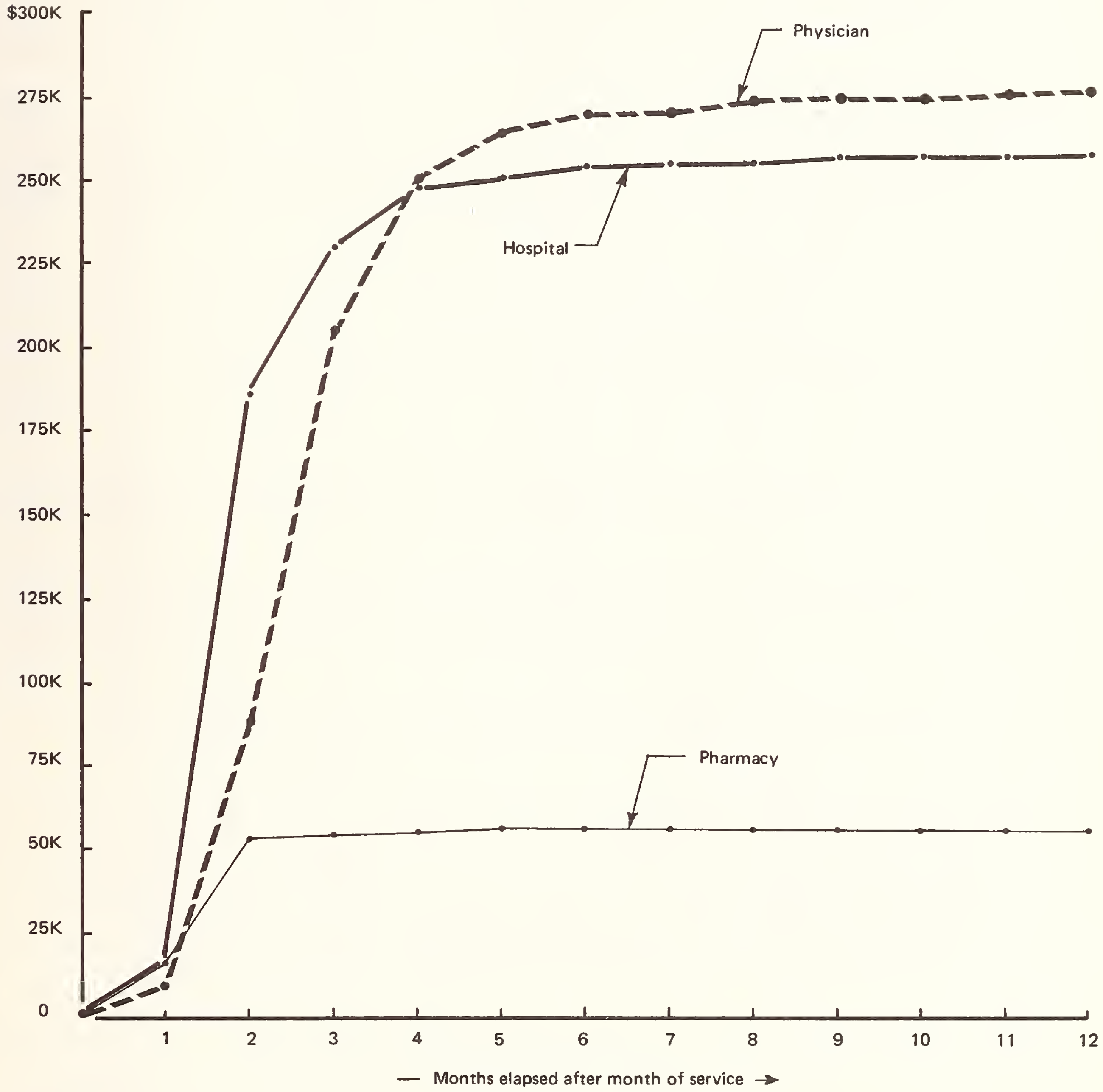
It is obvious that the curves differ from one category of service to another, although they all have the same general shape. Although the exact shape of these curves will vary from one Medicaid program to another (and over time within any one Medicaid program), the differences between categories of service will persist because of essential differences in claims adjudication requirements. Pharmacy claims tend to be simplest in information content, and cannot be subject to many medically-oriented judgments during claims processing; hence, they are submitted and paid quickly. Physician and hospital claims can be, and usually are, subjected to more medical review, which results in longer average time to payment.

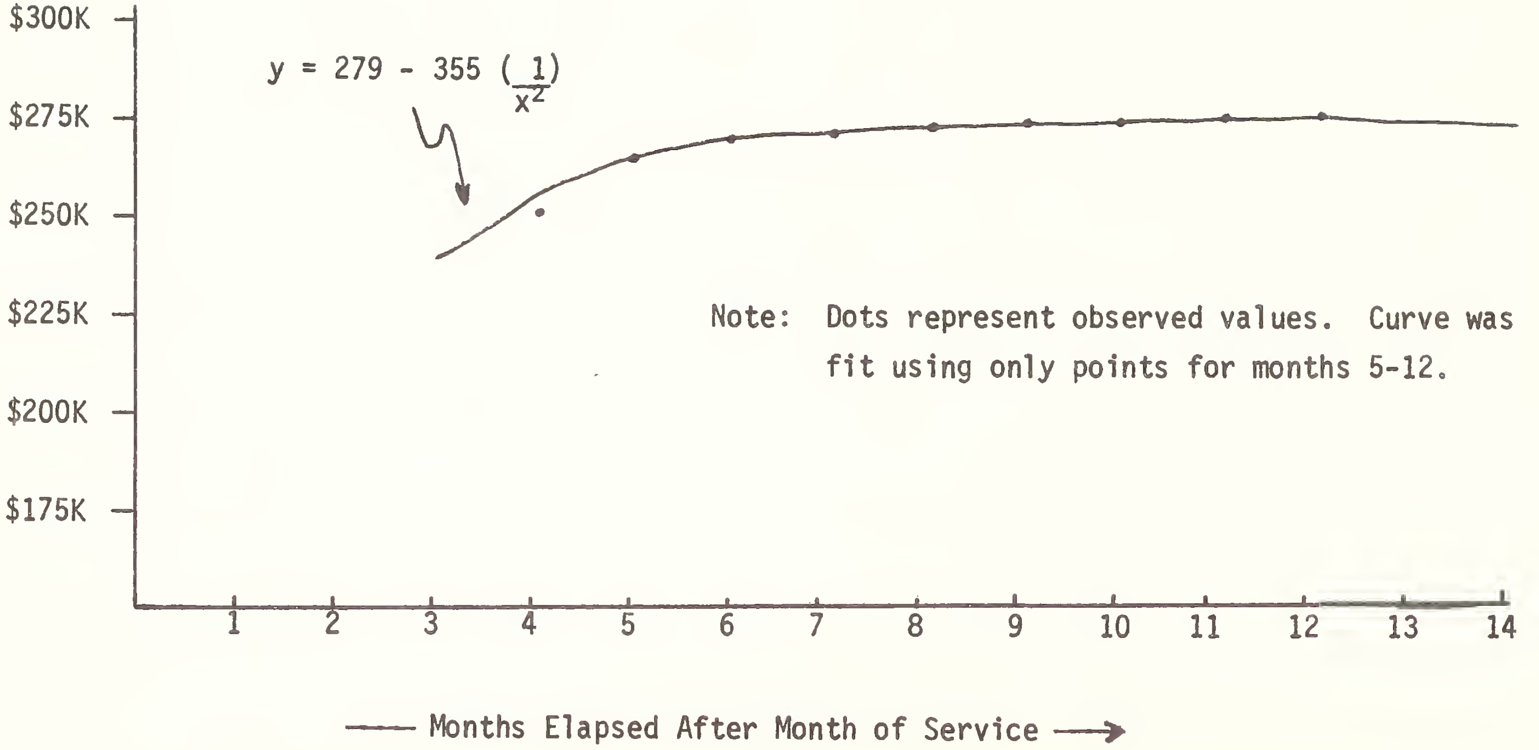
It is rather obvious from Illustration 4-2 that for pharmacy claims the cumulative payment reaches a maximum after three or four months, and hospital and physician payments after six or seven months. For this particular claims processing system, payment for a given month of service can be considered nearly complete after these intervals, and this fact can be used to estimate completion factors for shorter intervals.

For example, the "Hospital" curve in Illustration 4-2 suggests that the final value for total payment will be about $255,000. The amount paid by the end of month two was $182,000, so a two-month interval would have a completion factor of $182,000/$255,000 = 71.4%.

A more accurate method for estimating the final value for total payment is to fit a curve to the last several data points, in order to find the limit to which that curve is tending. We give an example of this technique in Illustration 4-3, for the "Physician" payment category. The form of the curve is $y = a + b(1/x^2)$, where y represents the cumulative

Illustration 4–2: Cumulative Payments for Three Categories of Service (for a Northern California HMO)





Note: Dots represent observed values. Curve was fit using only points for months 5-12.

Illustration 4-3: Curve fitted to observed cumulative payments for physician services, in order to calculate final total.

amount paid and x represents the interval elapsed after month of service. In this equation, as x gets larger (the elapsed time extends), the term $b(1/x^2)$ gets smaller rather quickly, so that y gets closer and closer to a. Thus, a represents the final value for total payment.

In Illustration 4-3 we ignored the data points for the first four months, in order to obtain a better fit of the curve to the remaining data points, and thus a better estimate of the final amount. The curve resulting from a least squares fit* for months 5 through 12 was $y = 279 - 355(1/x^2)$, meaning that the final value for total payment is estimated at $279,000.

When this same curve-fitting technique is applied to the "Hospital" and "Pharmacy" data points, we obtain estimates of final value for total payment of $259,600 for hospital claims and $57,000 for pharmacy claims. (Note that for hospital claims this estimate is above our original "eyeball" estimate of $255,000 although the difference is only about 2%.)

We now have the information necessary to calculate completion factors as shown in Illustration 4-4. The "cumulative payment" columns in this illustration contain the data used to derive the growth curves in Illustration 4-2. These are converted into completion factors simply by dividing each number by the estimated final payment amount for each category of service.

The completion factors can then be used to estimate incurred (but not yet completely paid) costs in recent months. Illustration 4-5 shows how this is done, using the "Physician" factors just derived.

In actual practice, an analyst calculating completion factors should also take into account the following potential influences on the cumulative payment growth curve for a given calendar month:

1. Seasonal variations due to high incidence of vacation time (summer) and holidays, which affect both providers and the fiscal intermediary.

2. Month-to-month variation in the number of work days and/or the number of checkwrites. For example, if a Medicaid claims processing system routinely writes checks to providers once every two weeks, most months will have two checkwrites, but two months will have three. This significantly increases the volume of claims passed into the paid claims data files during those two months.

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*If the reader is unfamiliar with the mathematics used here, the graphic presentation will still communicate the general idea. We will soon return to simpler arithmetic.

	Physicians		Hospitals		Prescriptions	
	Cumulative Payment (1)	Completion Factor (2)	Cumulative Payment (3)	Completion Factor (4)	Cumulative Payment (5)	Completion Factor (6)
A. Estimated total payment ...	$279,000	100%	$259,600	100%	$57,000	100%
B. Interval after month of service						
1 month	$ 8,500	3.0%	$ 1,000	0.4%	$17,100	30.0%
2	87,800	31.5	182,200	70.2	54,000	94.7
3	206,000	73.8	230,300	88.7	55,900	98.1
4	250,800	89.9	248,300	95.6	56,500	99.1
5	265,000	95.0	251,600	96.9	56,600	99.3
6	269,600	96.6	254,600		56,700	99.5
7	271,400	97.3	255,700	98.1	56,700	99.5
8	274,000	98.2	256,300	98.7	56,800	99.6
9	274,700	98.5	258,100	99.4	56,800	99.6
10	275,400	98.7	258,100	99.4	56,800	99.6
11	276,500	99.1	258,200	99.5	56,800	99.6
12	277,100	99.3	258,200	99.5	56,800	99.6

Illustration 4-4: Calculation of completion factors

Month of Service	Physician Services: Payment Through May 1977	Physician Services: Completion Factor	Physician Services: Estimated Final Total Payment*
(1)	(2)	(3)	(4)
1. May 1976	$230,742	99.3%	$232,369
2. June	234,855	99.1	236,988
3. July	253,427	98.7	256,765
4. August	241,479	98.5	245,156
5. September	256,967	98.2	261,677
6. October	238,328	97.3	244,941
7. November	207,156	96.6	214,447
8. December	193,510	95.0	203,695
9. January 1977	212,431	89.9	236,297
10. February	182,202	73.8	246,886
11. March	78,941	31.5	250,606
12. April	8,121	3.0	270,700
Total	$2,338,159		$2,900,527

*Col. 4 = Col. 2 ÷ Col. 3

Illustration 4-5: Use of completion factors to estimate incurred costs by month of payment.

3. Any significant alteration in claims adjudication procedures. It is not unusual, for example, for some of the edits in a claims processing system to be turned off temporarily in order to clear out a large backlog of pended claims.

4. Other nonroutine influences, such as a strike at a fiscal intermediary.

Monitoring these influences on the service-to-payment lag time is a continuous task, but the statistics necessary to do it should be generated routinely in any well-managed Medicaid program. The Management and Administrative Reporting Subsystem (MARS) of the Federal model Medicaid Management Information System (MMIS), for example, contains one monthly report for monitoring intervals from date of service to date of claims receipt, and another report showing intervals from date of receipt to date of final adjudication.

Method 2: Month of Payment Statistics

As noted above, an alternative to using completion factors and claims data sequenced by month of service, is to use month of payment statistics. Such statistics are ordinarily generated by the invoice processing system itself, and do not require that data from newly-paid claims be resequenced by date of service and added to a history file. In Illustration 4-6 we show a portion of the month of payment report routinely produced in California's Medicaid program.

Many analysts balk at using data aggregated by month of payment to investigate utilization patterns and costs, because the data do not represent a "real" month's experience. That is, there does not exist any calendar month for which those services in the month of payment tabulation were actually rendered.* Other analysts find it possible to make the simplifying assumption that month of payment statistics are close enough to month of service realities for all practical purposes. (This pragmatic position is sometimes necessitated by the reluctance of Medicaid administrators to invest in creation and maintenance of claims data files sequenced by date of service.)

When month of payment statistics are linked with beneficiary counts in order to calculate per capita utilization rates and costs, another simplifying assumption must be made. This is the assumption that claims

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*An analogy may be drawn here with astronomy, which must deal with a sky that in the very same sense is not "real." Because the light from stars varies considerably in time required to reach Earth--from minutes to millions of years--the configuration of stars we see is only virtual; it does not exist and never did.

CALIFORNIA DEPARTMENT OF HEALTH MEDI-CAL SERVICES AND EXPENDITURES REPORT FOR MONTH-OF-PAYMENT OCTOBER, 1975 PAGE 8.089

SACRAMENTO COUNTY SUMMARY OF SERVICES FOR REFUSED GRANT 4-08-76

953 ELIGIBLES	USERS	UNITS OF SERVICE OR DAYS OF CARE	EXPENDITURES	AVERAGE UNITS OR DAYS PER ELIGIBLE	AVERAGE COST PER UNIT/DAY	AVERAGE COST PER USER	AVERAGE COST PER ELIGIBLE
TOTAL, ALL PROVIDERS	897	4,882	$ 75,955.66	5.1228	$ 15.5583	$ 84.6774	$ 79.7016
PHYSICIANS SERVICES	420	1,096	$ 17,865.42	1.1501	$ 16.3006	$ 42.5367	$ 18.7465
OUTPATIENT VISITS	261	355	3,246.65	.3725	9.1455	12.4393	3.4068
HOME VISIT	0	0	0.00	.0000	.0000	.0000	.0000
OFFICE VISIT	256	343	3,144.71	.3599	9.1683	12.2840	3.2998
OUTPATIENT FACILITY VISIT	7	12	101.94	.0126	8.4950	14.5629	.1070
INPATIENT VISITS	28	99	751.02	.1039	7.5861	26.8221	.7881
HOSPITAL VISITS	22	93	731.10	.0976	7.8613	33.2318	.7672
NURSING HOME VISITS	6	6	19.92	.0063	3.3200	3.3200	.0209
EYE EXAMINATIONS	14	17	218.20	.0178	12.8353	15.5857	.2290
SURGERY	102	172	10,284.89	.1805	59.7959	100.8323	10.7921
PRINCIPAL SURGEON	88	109	9,290.77	.1144	85.2364	105.5769	9.7490
ASSISTANT SURGEON	4	4	187.67	.0042	46.9175	46.9175	.1969
ANESTHESIOLOGIST	21	59	806.45	.0619	13.6686	38.4024	.8462
LABORATORY	95	194	705.04	.2036	3.6345	7.4220	.7399
RADIOLOGY	37	95	1,121.17	.0892	13.1907	30.3019	1.1765
PSYCHIATRY	5	24	461.75	.0252	19.2396	92.3500	.4845
OTHER PHYSICIAN SERVICES	89	150	1,076.65	.1574	7.1777	12.0972	1.1297
PHARMACY	329	640	[illegible]	[illegible]	$ 6.5254	$ 12.6938	$ 4.3822
PRESCRIPTION DRUGS	326	629	[illegible]	[illegible]	6.5428	12.6239	4.3184
DRUGS FOR L M PATIENTS	12	31	[illegible]	[illegible]	6.2119	16.0475	.2021
ALL OTHERS	315	596	[illegible]	[illegible]	6.5599	12.4534	4.1163
MEDICAL SUPPLIES	8	11	[illegible]	[illegible]	5.5345	7.6100	.0639
DME AND PROS/ORTH APPL	0	0	[illegible]	[illegible]	.0000	.0000	.0000
DENTIST	106	734	[illegible]	[illegible]	$ 8.9201	$ 61.7677	$ 6.8703
VISITS AND EXAMINATIONS	80	132	194.61	[illegible]	1.4743	2.4326	.2042
RESTORATIVE DENTISTRY	53	254	3,269.24	.2665	12.8710	61.6838	3.4305
PROSTHETICS	14	34	1,935.89	.0357	56.9379	138.2779	2.0314
RADIOGRAPHY	79	234	626.67	.2455	2.6781	7.9325	.6576
EXTRACTIONS AND SURGERY	18	48	358.89	.0504	7.4769	19.9383	.3766
DRUGS	3	3	14.20	.0031	4.7333	4.7333	.0149
ANESTHESIA	3	3	40.38	.0031	13.4600	13.4600	.0424
PERIODONTICS	3	7	71.75CR	.0073	10.2500CR	23.9167CR	.0753CR
ROOT CANAL -ENDODONTICS-	6	15	177.25	.0157	11.8167	29.5417	.1860
SPACE MAINTAINERS	1	2	0.00	.0021	.0000	.0000	.0000
FRACTURES AND DISLOCATIONS	0	0	0.00	.0000	.0000	.0000	.0000
OTHER DENTAL SERVICES	2	2	2.00	.0021	1.0000	1.0000	.0021
OPTOMETRIST	35	95	$ 1,199.51	.0997	$ 12.6264	$ 34.2717	$ 1.2587
VISITS AND EXAMINATIONS	25	38	514.61	.0399	13.5424	20.5844	.5400
APPLIANCES	21	57	684.90	.0598	12.0158	32.6143	.7187
OTHER OPTOMETRY SERVICES	0	0	0.00	.0000	.0000	.0000	.0000
CHIROPRACTOR	8	15	$ 58.04	.0157	$ 3.8693	$ 7.2550	.0609
VISITS	4	5	25.24	.0052	5.0480	6.3100	.0265
OTHER CHIROPRACTIC SERVICE	4	10	32.80	.0105	3.2800	8.2000	.0344

Illustration 4-6: Routine Month-of-Payment Report

paid during a given calendar month are reasonably representative of services actually rendered during a specific prior month. This permits the beneficiary count for that prior month to be used as the denominator for per capita statistics. For example, if 200,000 AFDC beneficiaries were eligible during January, and if the amount paid for AFDC health care was $6,000,000 in April, the AFDC per capita cost for January would be estimated at $6,000,000/200,000 = $30. (The decision to match January and April would reflect an estimate that the average interval between date of service and date of payment was three months.)

A number of error-inducing influences can easily be imagined for this type of estimate of monthly per capita cost. For example, payments made in February would probably under-estimate costs incurred in the preceding November, because of the difference in number of work-days in the three months. When the time window is extended from one month to six months or a year, however, the month to month variability tends to average out. Using the amount paid during March through August as the numerator, and total beneficiary-months for January through June as the denominator, would produce a believable January-June per capita cost estimate.

We have not carried out a thorough analysis of the accuracy of this type of estimation of per capita costs, but we have had the opportunity to note the contrast between such estimates and retrospectively determined costs in two situations. In Illustration 4-7A we show the contrast between per capita costs estimated from month of payment data and per capita costs later calculated from month of service data, for AFDC and ATD beneficiaries in five northern California counties. In Illustration 4-7B we show a similar comparison for AFDC beneficiaries in each of seven counties.

It appears from these two examples that the month of payment estimate is, in general, rather accurate. The percentage difference shown for San Bernardino County and San Diego County in Illustration 4-7B, however, indicates that this is not always the case. When this method of estimating per capita costs is used, it should be checked against other reference points whenever possible.

Chronological Projections

We are now ready to illustrate a procedure for chronological projection of the fee-for-service per capita cost. This procedure is based on the following principles:

1. A simple linear trend line is sufficient for purposes of this projection. Since the figure to be projected will represent a full year, the vagaries of seasonal effects are not a major concern.

A. Five Northern California Counties, 1974

Aid Category (1)	Month-of-Payment Estimate* (2)	True Value** (3)	Percent Difference (4)
AFDC	$21.68	$21.52	+0.7%
ATD	$82.01	$82.34	-0.4%

*Based on claims paid during Oct-Dec 74.

**Based on claims paid from January 1974 through June 1976, for services during 1974

B. Seven California Counties, 1975, AFDC

County (1)	Month-of-Payment Estimate* (2)	Month-of-Service Estimate** (3)	Percent Difference (4)
Alameda	$37.15	$36.90	+0.7%
Contra Costa	32.90	32.48	+1.3
Los Angeles	33.35	33.60	-0.7
Orange	40.98	39.40	+4.0
San Bernardino	26.67	30.50	-12.6
San Diego	34.46	31.91	+8.0
Santa Clara	29.73	31.16	-4.6
7-County Total	$33.38	$33.54	-0.5%

*Based on claims paid during Oct 75-Mar 76 and beneficiary counts for July-December 1975.

**Based on 5% sample of claims paid from January 1975 through June 1976, for services rendered during 1975.

Illustration 4-7: Comparison of per capita cost estimates, month-of-payment vs. month-of-service.

2. Projections should be made for each major category of service independently since they can be expected to vary from one another with respect to per capita cost trends. For example, hospitals, which are reimbursed on a reasonable cost basis, have recently had a much higher rate of growth of charge rates than physicians, for whom a state typically sets maximum reimbursable fees.

3. Within each category of service, projections should be made for (a) utilization rates, and (b) unit service costs, independently. Again, this is in recognition that trends in the two factors may differ from one another. In fact, for most categories of service the unit service costs are highly dependent on the Medicaid agency's year-to-year decisions about rate increases, rather than being an independent "natural" phenomenon. For example, a state may decide not to increase maximum fee levels for physicians for the coming budget year, in which case a simple linear projection based on past experience must be adjusted accordingly. Projecting unit service costs independently of utilization rates permits adjustments such as these to be incorporated in the projection process easily.

We will illustrate projection calculations for the AFDC aid category, for Los Angeles County. We assume that we have the utilization rate and cost data shown in Illustration 4-8 for each quarter from October 1975 through September 1976. Our objective is to estimate what the per capita cost is going to be for the period January-December 1978. (The figures shown in this table were calculated by the second method discussed above, using month of payment statistics for the numerators, and three-month-lagged beneficiary counts for the denominators of the utilization rate figures.)

In this table we have again made the simplifying assumption that we are concerned only with three service categories--physician services, hospital inpatient care, and pharmacy services. These will be sufficient to illustrate the techniques; they also account for about 80% of the total cost.

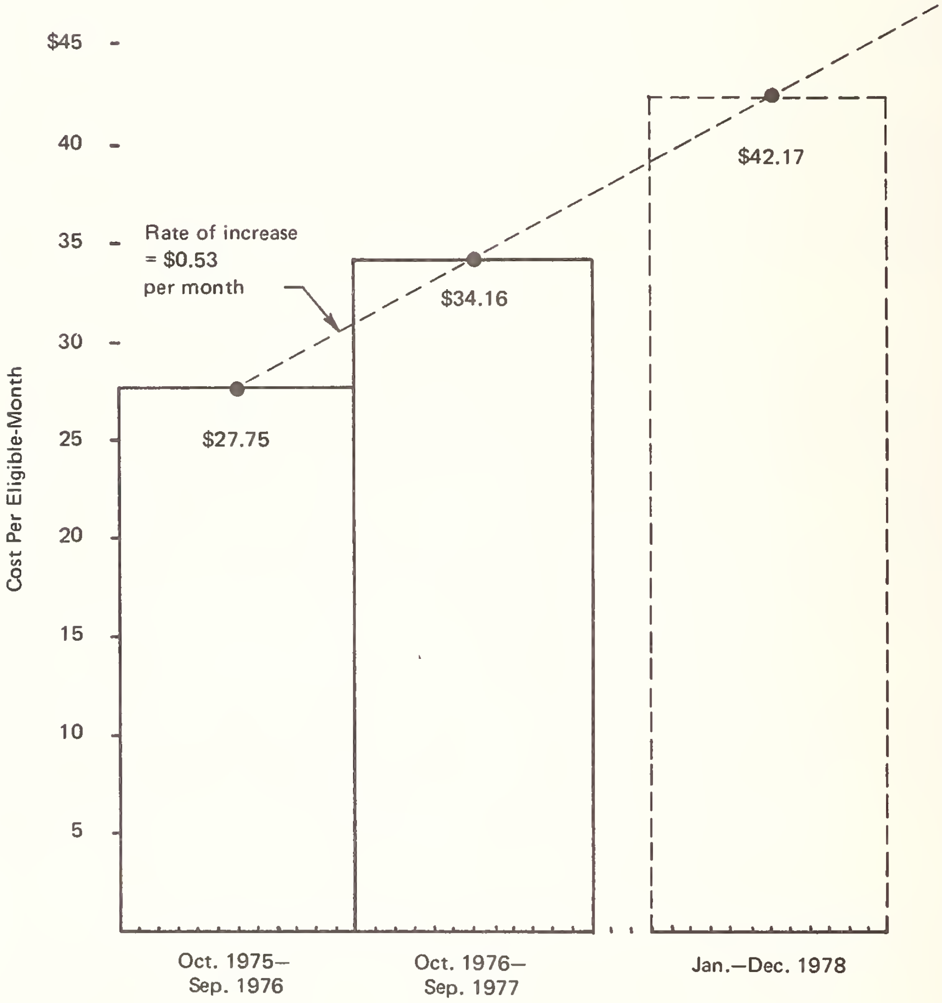
The simplest way of projecting per capita cost is to use the actual per capita costs in each of the two most recent 12-month periods to determine a linear trend. This is shown in Illustration 4-9, based on the statistics in Illustration 4-8. The cost per eligible-month was $27.75 (all three service categories taken together) during the period October 1975-September 1976, and $34.16 during the period October 1976-September 1977. This represents an average increase of $0.534 per month.

Time Period	Eligible-Months	Units of Service Per Eligible-Month			--Payment Per Unit of Service---			Per Capita Cost (all three services)	
		Physician	Hosp Inpt	Pharmacy	Physician	Hosp Inpt	Pharmacy		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
1. Oct-Dec 75	1,402,396	0.78	0.0849	0.50	$13.65	$181	$5.30	$28.68	$27.75
2. Jan-Mar 76	1,480,400	0.75	0.0767	0.51	13.75	179	5.37	26.71	
3. Apr-Jun 76	1,446,742	0.73	0.0772	0.41	14.30	190	5.58	27.38	
4. Jul-Sep 76	1,455,126	0.72	0.0781	0.43	14.55	197	5.60	28.29	
5. Oct-Dec 76	1,470,550	0.80	0.0833	0.52	16.12	228	5.57	34.70	$34.16
6. Jan-Mar 77	1,450,027	0.80	0.0784	0.51	16.31	240	5.75	34.88	
7. Apr-Jun 77	1,627,166	0.71	0.0738	0.40	16.89	251	6.01	32.96	
8. Jul-Sep 77	1,608,000	0.67	0.0756	0.41	16.84	271	5.91	34.18	

Illustration 4-8: Utilization and cost statistics for AFDC, Los Angeles County

Note: Units of service and amounts paid were taken from month-of-payment statistics for the three-month period subsequent to each of the periods listed in Column 1.

Illustration 4–9: Simple linear projection of monthly cost per eligible, for physician, pharmacy and hospital inpatient combined: AFDC, Los Angeles County.



Estimating for January-December 1978 represents a 15-month projection from the latter figure (that is, it is 15 months from the middle of October 1976-September 1977 to the middle of January-December 1978). The projected per capita cost is found by adding 15 X $0.534 = $8.01 to $34.16, which yields $42.17.

It is possible that this very simple projection method could obscure a variety of inaccuracies. For example, hospital charges probably have an inflation rate higher than physician charges, which may change the proportion of Medicaid dollars going to each service, with the result that the aggregate increase would not be linear. In order to test for such effects, we now make several projections independently of one another: eligible-months, utilization rates for each category of service, and cost per unit of service for each category of service.

In Illustration 4-10 we project the eligible-months for each of the quarters in January-December 1978. This time, instead of using just two points to determine a projection line, we have fitted a line to the points representing each of the eight previous quarters. (This is another application of the "least-squares" line fitting technique mentioned above. Again, for the non-mathematical reader the graph should suffice.)

In Illustration 4-11 we show the results of similar projections for hospital utilization rates and cost per day. In this case a somewhat fancier projection method was used, which picks up seasonal variations from one quarter to the next rather than just generating a straight line as in the previous illustration.* The bottom half of Illustration 4-11 makes it clear that there is indeed seasonal variation, in hospital utilization. In addition to the seasonal variation, there is also a discernible downward trend in utilization.

When these same projections are made for utilization rate and cost per unit for each of the other two categories of service, we obtain the statistics shown in Illustration 4-12. Here we have for each quarter in the period January-December 1978 the statistics necessary to calculate (1) the cost per eligible-month for each of the three categories of service, and (2) the cost per eligible-month for all three together. These can be aggregated across all four quarters, using the projected eligible-months in line 1 as weights, to arrive at the estimated per capita cost for the entire year.

The resultant figure is $41.97, which is not very different from the estimate of $42.17 obtained in the simple projection of Illustration 4-9. The difference is less than 2%. This result suggests that simple methods of projection may often prove as accurate as more

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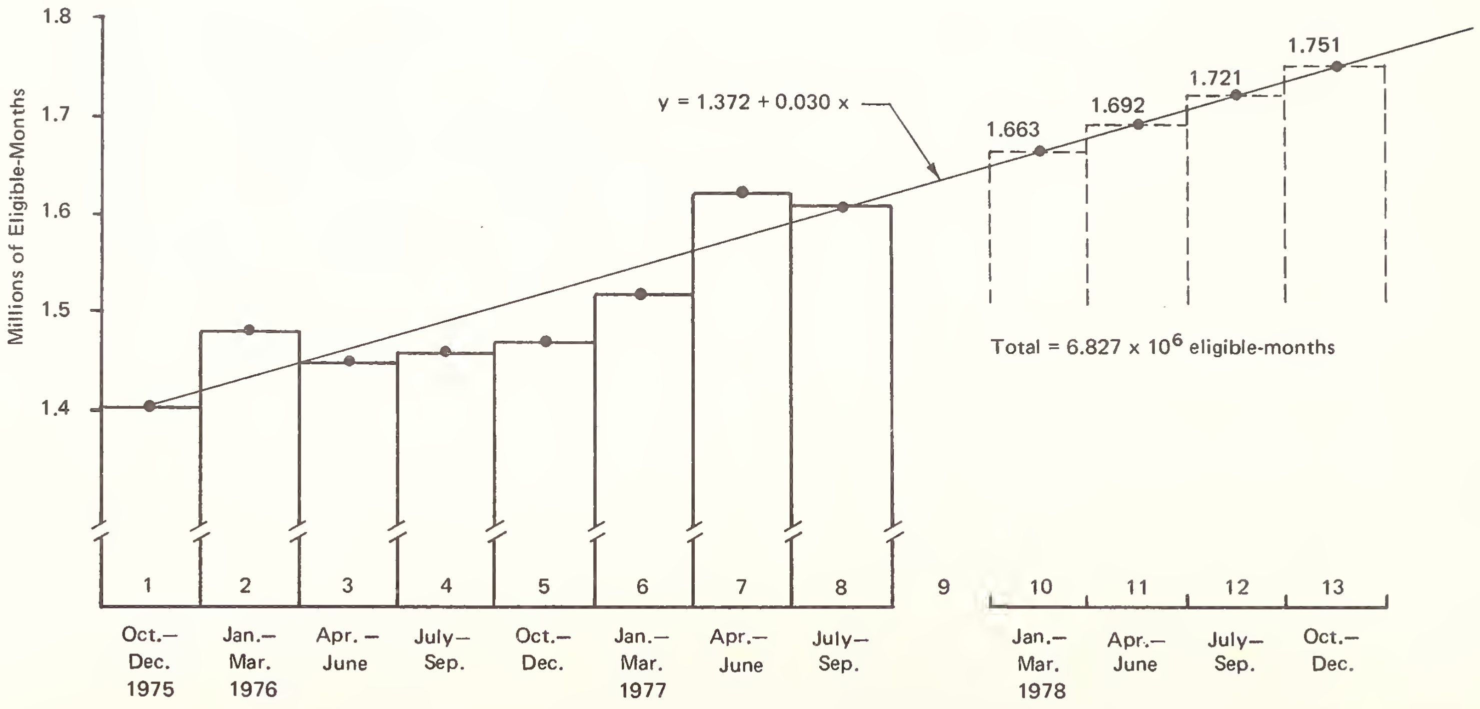
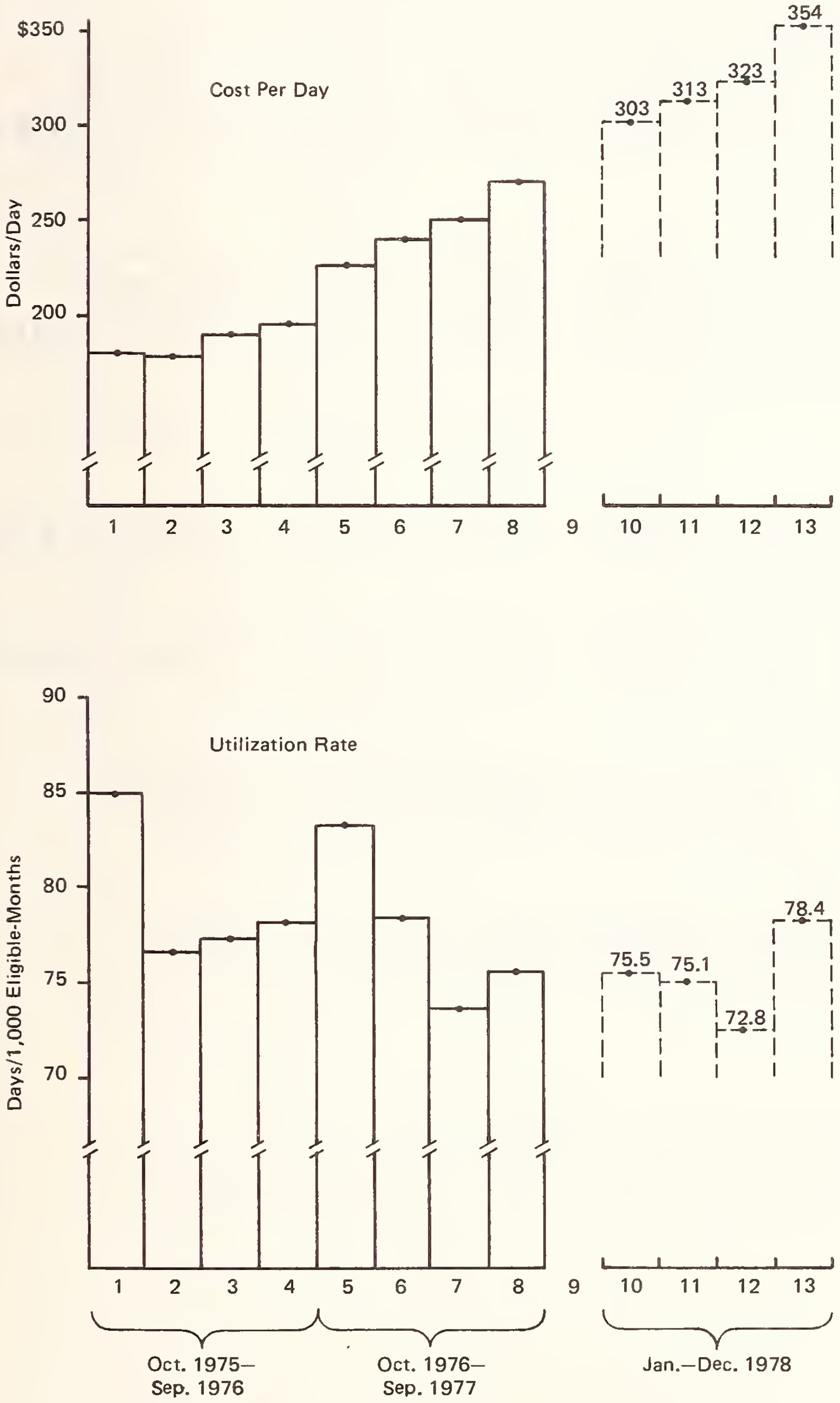
*Least squares regression using two independent variables: quarter (with values 1, 2, ... 8) and "season" (with values 1, 2, 3, or 4).

Illustration 4—10: "Least-Squares" Projection of Eligible-Months, AFDC, Los Angeles County



Oct. 1975 – Sep. 1976: 5.784 } 0.038/month
Oct. 1976 – Sep. 1977: 6.241 }
Jan. – Dec. 1978: 6.812

Illustration 4–11: Projections of hospital inpatient utilization rate and cost per day, AFDC, Los Angeles County



Statistic (1)	Quarter Jan-Mar (2)	Apr-Jun (3)	Jul-Sep (4)	Oct-Dec (5)	Full Year (6)
1. Eligible-months (millions)	1.663	1.692	1.721	1.751	6.827
2. Hospital inpatient					
a. Days/1,000 elig-month	75.5	75.1	72.8	78.4	
b. $/day	$303	$313	$323	$354	
c. $/eligible-month	$22.88	$23.51	$23.51	$27.75	$24.44*
3. Physician services					
a. Units/1,000 e-m	760	730	690	800	
b. $/unit	$18.87	$19.17	$19.47	$21.05	
c. $/eligible-month	$14.34	$13.99	$13.43	$16.84	$14.67*
4. Pharmacy					
a. Units/1,000 e-m	480	440	400	510	
b. $/unit	$6.10	$6.22	$6.34	$6.33	
c. $/eligible-month	$2.93	$2.74	$2.54	$3.23	$ 2.86*
5. Total $/elig-month (2c + 3c + 4c) ...	$40.15	$40.24	$39.48	$47.82	$41.97*

Illustration 4-12: Projection of Per Capita Cost By Projecting Each Component, AFDC, Los Angeles County

*Weighted average, using eligible-months (row 1) for weights.

sophisticated methods. This is a particular example, of course, and may not always hold true. Analysts in each Medicaid program should investigate their own data in the manner exemplified above, before deciding upon the method to be used for predicting the future from past experience.

In our projection analysis to this point we have treated utilization and cost trends as external phenomena to be observed but not influenced. This is not realistic, of course--a Medicaid agency continually attempts to control utilization rates and unit costs, and sometimes manages to do so. There is often reason to believe that during a future time period there will be significant change in the factors that determined utilization and cost trends during a recent time period, and the projection should be modified accordingly.

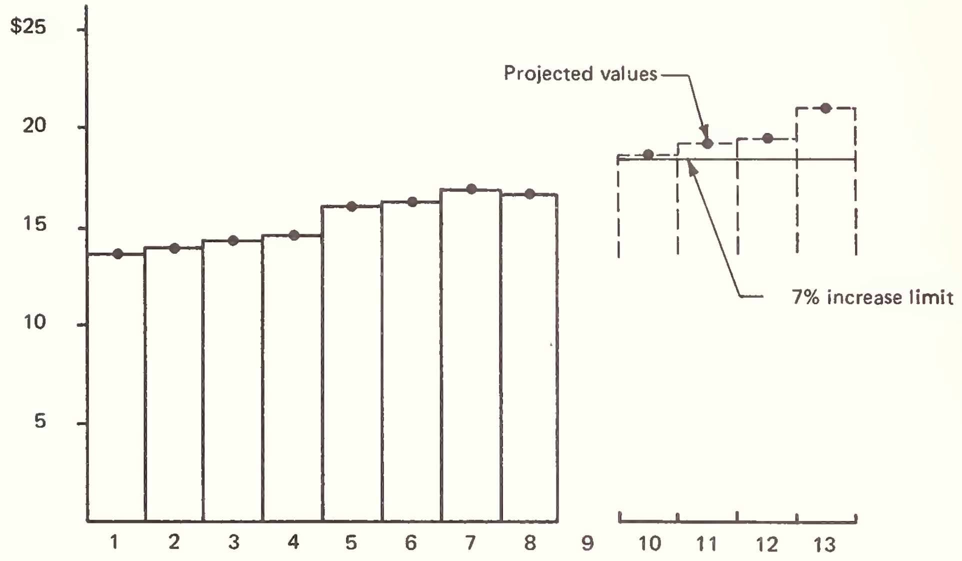
This is particularly true for the categories of service in which the agency sets maximum fee levels, such as physician services. The agency may decide not to raise fee maximums from one year to the next, or to raise the maximums by a certain percentage. For the example we are using here we will assume that a policy decision has been made that physician maximum fees for January-December 1978 will be raised 7% beyond the maximums for January-December 1977.

We will also assume that the relationship between the average amount reimbursed for physician services and the maximum fees will remain the same; that is, the cost per unit of physician service will also rise 7% from 1977 to 1978. The first step, then, is to estimate the cost per unit of physician service for January-December 1977, using our statistics from October 1975 through September 1977. This is done in the same manner as shown above for projecting to January-December 1978. We will not repeat the calculation; the result is an estimate of $17.17 per unit of physician service during 1977.

The projected figure for 1978, then, is simply $17.17 X 1.07 = $18.37. In Illustration 4-13 we show the contrast between the unit costs that would be projected strictly on the basis of past trends and this unit cost that results from assuming a 7% increase limit. In Illustration 4-14 we show the recalculation of projected per capita costs based on this modification of the projection for physician services. The per capita cost estimate is $40.99, in contrast to $41.97 derived in Illustration 4-12.

This illustrates a major rationale for making projections separately by category of service, and separately for utilization rates and unit costs--such disaggregation can allow the trends represented by experience data to be modified for the expected effects of policy changes.

Illustration 4—13: Projection of Cost Per Unit of Physician Services vs. 7 Percent Increase Limit, AFDC, Los Angeles County



Statistic (1)	Quarter Jan-Mar (2)	 Apr-Jun (3)	 Jul-Sep (4)	 Oct- Dec (5)	Full Year (6)
1. Eligible-months (million)	1.663	1.692	1.721	1.751	6.827
2. Physician services					
a) Units/1,000 elig-months	760	730	690	800	
b) $/unit	$18.37	$18.37	$18.37	$18.37	
c) $/eligible-month	$13.96	$13.41	$12.68	$14.70	$13.69
3. Hospital inpatient (from Illustration 4-12) ...					$24.44
4. Pharmacy (from Illustration 4-12) ...					$ 2.86
5. Total cost per eligible-month ...					$40.99

Illustration 4-14: Projection of Per Capita Cost Using 7% Increase for Physician Fees.

Completed Calculation of FFS Maximum

Our estimate of $40.99 developed in this example is for just the three categories of service used above; in order to have a realistic figure to use in the remaining steps of calculating the FFS maximum, we will assume that for all categories of service the projected per capita cost would be $51.24. We will now carry forward the example to arrive at a FFS maximum for AFDC capitation rates, for Medicaid-contracting HMOs in L.A. County, for the period January-December 1978.

The first two adjustments are standard for all HMOs, as follows:*

1. Newborn coverage prior to formal eligibility of the newborn is estimated to represent a liability to the HMO averaging $0.50 per capita per month over all AFDC members. This is added to fee-for-service per capita cost estimate: $51.24 + $0.50 = $51.74.

2. The risk limitation of $10,000 per year for any one enrollee is estimated to represent a decrease in liability to the HMO amounting to 2.2% of the per capita cost. This is subtracted from the fee-for-service per capita cost estimate: $51.74 - ($51.74 X 2.2%) = $51.74 - $1.14 = $50.60.

The next adjustment modifies the FFS per capita cost estimate in accordance with the age/sex mix of each HMO, as shown in Illustration 4-15. The multiplicative adjustment factors used in the illustration were derived by a process yet to be explained, in Chapter 7.

In order to derive FFS maximums for each Medicaid-contracting HMO, these calculations would be replicated for each county (which we use as a convenient approximation of HMO service area) and each aid category.

Multi-County HMOs

There remains one final calculation to make, for those HMOs that have service areas crossing county boundaries. We prefer to have one capitation rate for each aid category of Medicaid enrollee in such HMOs, rather than separate rates for each county of enrollee residence, and this requires combining FFS maximums calculated for each county into one maximum (per aid category) for the HMO.

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*Keep in mind that these two adjustments are specific to California's program; other states may have similar factors for which to adjust in this manner, but the exact adjustments will be different from these examples.

FFS Per Capita Cost (2)	Age/Sex Adjustment Factor (3)	FFS Maximum (4)
$50.60	1.009	$51.06
50.60	1.005	50.85
50.60	0.982	49.69
50.60	0.965	48.83
50.60	0.956	48.37
50.60	0.941	47.61
50.60	0.902	45.64

Illustration 4-15: Age/Sex adjustment in calculation of FFS maximum.

This is done by the method shown in Illustration 4-16. A weighted average FFS maximum is computed using the number of enrollees in each county as the weighting factor. There is, of course, an implicit assumption here that the distribution of enrollees among counties will not vary significantly between now--the time the analysis is being done--and the contract period for which rates are being calculated.

Summary

Following are the major points made in this chapter:

1. Each capitation rate established for a Medicaid-contracting HMO cannot exceed the estimated per capita cost under fee-for-service, for the same scope of services to an actuarially-equivalent population. This estimated per capita cost we call the FFS maximum.

2. An actuarially equivalent population can be simulated by finding fee-for-service utilization and cost statistics for each demographic category. Assuming that a capitation rate will be set for each aid category, the additional demographic factors we recommend taking into account are age, sex, and area of beneficiary residence for AFDC, and area of residence for the adult aid categories.

3. Calculation of the FFS maximum will require the use of paid claims data representing recent fee-for-service experience. As is usual when working with claims data, the date of service to date of payment lag time is an issue. We recommend resolution of the issue in one of the following two ways: (a) use data aggregated by date of service, with completion factors used to estimate claims incurred, but not yet paid, in recent months; or (b) use data aggregated by date of payment, with beneficiary counts from a lagged time period.

4. The basic chronological projection itself can be made with a simple linear trend, but projections should be made separately for each major category of service, and, within each category of service, separately for utilization rates and unit costs. The linear trends calculated from experience data should be modified as appropriate to incorporate reimbursement policy changes that will be effective during the future contract period for which rates are being calculated.

County (1)	No. of Members (2)	FFS Per Capita Cost (3)	Weighted Average* (4)
Los Angeles	45,930	$50.60	$50.63
Orange	3,171	55.10	
San Bernardino	1,857	43.72	
	50,958		

$$* \ \frac{(45{,}930 \ \text{X} \ \$50.60) + (3{,}171 \ \text{X} \ \$55.10) + (1{,}857 \ \text{X} \ \$43.72)}{50{,}958}$$

Illustration 4-16: Calculating FFS maximum for multi-county HMOs

5. The projected fee-for-service per capita costs should be adjusted upward to account for any cost-related requirements placed on the Medicaid-contracting HMO that are not included in fee-for-service, and adjusted downward for cost-related exemptions given to the HMO.

6. Finally, adjustment should be made for any demographic factors not included in the projection calculations themselves. For example, in the illustration used in this chapter we made the AFDC projection specific to aid category and county, but then used an age/sex index as a multiplier to adjust the projected fee-for-service per capita cost to the age/sex mix of each HMO.

CHAPTER 5: COMMUNITY RATE MAXIMUM

Present federal regulations require that when establishing a Medicaid capitation rate, "...the upper limit...shall be established by ascertaining what other third parties are paying for comparable services under comparable circumstances." Saying that an upper limit shall be "established by ascertaining" is not quite the same thing as saying that the upper limit "shall be what other third parties...etc.," but the latter appears to be the intent of the regulation.

The language of this regulation is easily translated into the following:

> The upper limit shall be the community rate ("what other third parties are paying") adjusted for scope of benefits ("comparable services") and expected utilization levels ("comparable circumstances").

This chapter will examine how this precept can be operationalized.

Community Rate

The community rating principle is that all members of a group (the "community") should pay the same premium for a standard benefit package. A slight variation on this definition would have per member rates vary by family size, but would have a standard rate throughout the group for each family size. This is in contrast to "experience rating," which would involve adjusting the rates upward or downward for a subgroup, in accordance with that subgroup's utilization experience.

The effect of the community rating principle is to have the HMO become the distributor of risk among the community. The healthy members of the community subsidize the unhealthy; the non-smokers subsidize the smokers; the lean, the obese; the stoic, the hypochondriacal, etc. Community rating is considered desirable because it gives the HMO the incentive to reduce the proportion of the membership community that are high utilizers and/or health risks.

All federally qualified HMOs are required to follow the community rating principle. Like most principles, however, community rating is seldom applied in pure form. The simplest definition of "community" would be geographical: all residents of the HMO's service area would be considered the community, and could purchase the standard benefit package at the same premium. Using this definition, exact application of the community rating principle would have Medicare and Medicaid capitation rates at the same level as private premiums, even though these two subgroups have (of necessity) higher utilization. The community rate would be higher than necessary for private members only, and the private members would be doubly taxed for support of the public program beneficiaries.

Thus, in practice, "community" is usually defined in terms of major subgroups of the general population. In particular, the Medicare beneficiary population is ordinarily treated as a community, and each Medicaid aid category is treated as a community. Rates for each of these communities reflect expected utilization levels, which is an attribute of experience rating. The distinction between community rating and experience rating is considerably diminished when dealing with beneficiaries of publicly funded programs.

Adjusting the Community Rate

When an HMO has a community rate, that rate will need the following kinds of adjustment in order to translate it into an upper limit for the Medicaid capitation rates:

1. Additions for services that are covered by Medicaid but not in the HMO's standard benefit package, on which the community rate was based.
2. Subtractions for services in the HMO's benefit package that are not covered by Medicaid.
3. Adjustments for copayments; if required of private members for certain services.
4. Adjustments for expected differences in utilization levels, between the Medicaid population and the "community" assumed by the HMO when the community rate was developed.

For convenience in the remaining discussion, we will use the term "commercial rate" to mean an HMO's community rate for its private membership. There may be different benefit package options for the private membership, of course, each with its own commercial rate. In general, Medicaid benefits are liberal, and the commercial rate of interest will be that for the HMO benefit package of broadest scope.

Example HMO

We will illustrate these adjustments by carrying them out in relation to the AFDC aid category, for one of the California HMOs. The standard benefit package for this HMO is summarized in Illustration 5-1. The commercial rate for this package during the period used for this example was $31.64.

In order to make the necessary adjustments, we need to know not just the commercial rate itself, but the components of the rate--the utilization and/or cost assumptions upon which the rate is based. In this case, we were able to obtain the assumed cost per member-month for each service category and for administration. These figures are shown in Illustration 5-2.

Illustration 5-1: Basic Benefit Package for Example HMO

Medical Center Care
Physician visits, laboratory x-ray, short term physical therapy, injections, physical examinations, family planning.

Emergency Care
Ambulance, professional care, and hospital charges when a member cannot present himself to a medical center for treatment. Both in-area and out-of-area. Plan reserves the right to move member into a health plan facility as soon as medically advisable.

Hospital Care
Full in-area hospital coverage including semi-private room, operating suite, ICU, CCU, nursing, special duty nursing when prescribed by admitting physician, anesthesiology, lab, x-ray, drugs. Not included are blood and blood derivatives, items of a purely personal nature.

Maternity Care
Full pre- and post-natal medical and hospital services including delivery. Newborn is covered under mother's coverage until initial discharge from the hospital.

Dental Care for Children
Oral prophylaxis and fluoride treatment for children through age 11 by dental hygenist under direction of a physician. Does not include dental exams, x-rays, or fillings.

Medical Social Services
Counseling and community referral as requested by the member or prescribed by a plan physician.

Eye Examinations for Children
Refractions by a plan Optometrist through the age of 17. Does not cover the cost of glasses or contact lens.

Home Care
When prescribed by a plan physician; includes house calls, visits by home health nurse and other medical practitioners.

Mental Health
Up to 20 sessions with a psychiatrist, psychologist, or other duly licensed counselor for crisis intervention and evaluation. Group therapy may be used as judged appropriate by plan professional staff. Benefit excludes long-term therapy.

Alcohol & Drug Abuse
Case evaluation, detoxification when indicated, and case management. Benefit excludes long-term therapy and rehabilitation. Medical problems associated with alcohol and drug abuse are covered by plan, but medical or social problems associated with chronic alcoholosm or drug abuse are not.

Health Education
Counseling, classes and educational material on a variety of health subjects including pre-natal care, weight control, family planning, and diabetes control as presented by the plan Health Education staff.

Outpatient Prescription Drugs
As prescribed by a plan physician and dispensed by a plan approved pharmacy.

Illustration 5-2: Cost Per Member-Month Assumptions Underlying Commercial Rate of Example HMO

	Category of Service (1)	Estimated Cost Per Member-Month (2)
1.	Hospital inpatient	$9.44
2.	ECF	0.08
3.	Physician, outpatient	6.72
4.	Physician, surgery (outpatient)	1.94
5.	Immunizations	1.04
6.	Referred professional services	0.59
7.	Radiology	0.40
8.	Laboratory	0.87
9.	Emergency room	0.51
10.	Physical therapy	0.05
11.	Outpatient mental	0.39
12.	Prosthetics	0.09
13.	Ambulance	0.30
14.	Prescriptions	2.22
15.	Preventive Dental	0.42
16.	Vision - children	0.25
	Health care cost subtotal	$25.31
17.	Administration & reserves (20%)	6.33
	Total	$31.64

Adjusting for Benefit Package Difference

Following are the adjustments that were found to be necessary to account for differences in benefits between the HMO's standard package and the Medicaid requirements:

1. Dental--the HMO offered specified preventive services for children, but Medicaid required comprehensive dental care. The cost of the difference was estimated at \$1.83 per member-month.

2. Vision--the HMO offered eye exams for children, but Medicaid required full vision care for all ages, including eyeglasses. The cost of the difference was estimated at \$0.18 per member-month.

Adjusting for Copayment

The HMO had a \$1.00 per prescription co-payment for pharmaceuticals. For the Medicaid population, the estimated prescription rate was 4,200 per 1,000 members per year, so the copayment represented (4,200 X \$1.00)/12,000 = \$0.35 per member-month.

Adjusting for Utilization

For hospital inpatient and physician outpatient (the major cost categories), the commercial cost per member-month was adjusted to the Medicaid age/sex mix by the method shown in Illustration 5-3. Chapter 7 contains a more complete discussion of age/sex adjustment, and Chapter 6 cites sources of statistics that will be useful for this purpose.

Application of Adjustments

Illustration 5-4 summarizes the application of these adjustments. Column 2 in the illustration repeats the original cost assumptions that were used to build the commercial rate. Column 4 shows the adjusted assumptions. The sum of Column 4 is the adjusted commercial rate; in this case, \$36.21.

In summary, then, the adjustments to the Medicaid AFDC group raised the commercial rate by about 14%. This adjusted commercial rate is the best available estimate of "what other third parties are paying for comparable services under comparable circumstances."

Limitations of Commercial Rate Adjustment

There will be situations in which it will not be possible to apply the commercial rate adjustment we have just illustrated. A commercial rate will not always be available for a prepaid contractor. For example, Federal grantee organizations such as OEO nieghborhood health centers are exempt from Federal qualification as a prerequisite for Medicaid contracting. Such organizations ordinarily will not have a commercial rate.

Illustration 5-3: Age/Sex Adjustment For Physician Outpatient Care

Age/Sex Category*	Utilization Rate for General Population**	Age/Sex Distribution	
		Gen'l Pop	Medicaid AFDC
(1)	(2)	(3)	(4)
1. Males, 0-4	7.8	4.6	9.1
2. " , 5-14	4.0	10.2	21.1
3. " , 15-24	3.6	9.1	5.4
4. " , 25-34	3.7	7.6	0.9
5. " , 35-44	3.8	6.6	0.6
6. " , 45-54	4.4	6.5	0.3
7. " , 55-64	5.6	4.7	0.2
8. Females, 0-4	6.7	4.6	9.7
9. " , 5-14	3.3	10.2	19.8
10. " , 15-24	5.7	9.6	13.8
11. " , 25-34	7.1	7.5	10.8
12. " , 35-44	6.5	6.7	5.4
13. " , 45-54	6.5	7.0	2.1
14. " , 55-64	7.2	5.3	0.8
Total		100.0%	100.0%
Aggregate utilization rate		5.17	5.23
Ratio of AFDC/Gen'l pop.		1.01	

*The age group 65+ is negligible for AFDC.

**Encounters per person per year.

Illustration 5-4: Summary of Commercial Rate Adjustments

Category of Service (1)	Original Cost Estimate (2)	Type of Adjustment (3)	Adjusted Cost Estimate (4)
A. Benefit package differences			
1. Dental	$0.42	Drop 0.42 preventive Add 2.25 comprehensive	$2.25
2. Vision	0.25	Drop 0.25 children Add 0.43 comprehensive	0.43
B. Copayment			
3. Prescriptions	2.22	Add 0.35	2.57
C. Utilization (Age/Sex)			
4. Hospital inpatient	9.44	Multiply by 1.13	10.67
5. Physician outpatient	6.72	Multiply by 1.01	6.79
			22.71
6. All other services	6.26	None	6.26
Health care cost subtotal			28.97
7. Administration & reserves (20%)			7.24
Total			$36.21

Even when a commercial rate exists it may not be possible to adjust it to Medicaid aid categories other than AFDC. Age/sex adjustment suffices for AFDC, but the adult aid categories--ATD, OAS, and AB--have utilization patterns that are much different from either AFDC or the general population of private members. As a simple illustration of the magnitude of the difference, the 1977 per capita cost for AFDC in California's Medicaid program was approximately $40; for ATD the per capita cost was approximately $150, with the difference being almost completely due to higher utilization rates.

In the above example, we began with estimates of the cost per member-month for each category of service. For example, for hospital inpatient care, the commercial rate estimate was $9.44. In terms of the DUC model (Chapter 3), we can view such a statistic as the product of two implicit factors: (1) a utilization rate, and (2) a cost per unit of service. For example, a utilization rate of 453 days/1,000/year and a cost of $250/day would yield the per member-month cost of $9.44. If these utilization and cost components of the commercial rate have been made explicit by the HMO, they can be used to calculate upper limits for the adult aid categories. In fact, they can be the basis for setting the capitation rate itself.

In the following chapter we will describe the use of utilization and cost components of the commercial rate for the purpose of establishing a Medicaid rate.

CHAPTER 6: RATE-SETTING METHODS

In this chapter we will illustrate three methods of rate analysis, which we have labeled cost modeling, budget modeling, and community rate adjustment. Any of these methods can meet the requirement for "actuarial, reasonable" rates. Ideally, two or all three would be used in order to have cross-checking on reasonableness.

All three methods have fundamental concepts in common. The DUC conceptual model (Chapter 3) has elements that are either explicit or implicit in each of the three approaches. These elements should be recognizable as we proceed, and in some cases they will be pointed out.

Before undertaking any rate analysis method, decisions need to be made about the classifications to be used for demographic factors, categories of service, and cost categories. See Chapter 3 for discussion of theoretical considerations related to these classifications. In this chapter we will draw upon experience in California's program of Medicaid-contracting HMOs (which is known in California as the Prepaid Health Plan--PHP--program).

Demographic Factors

Throughout most of the history of California's PHP program, demographic factors were taken into account only by setting rates for each of the four public assistance aid categories which could be covered by prepaid contracts--Aid to Families With Dependent Children (AFDC), Aid to the Totally Disabled (ATD), Old Age Services (OAS), and Aid to the Blind (AB). This is certainly the minimum recognition of demographic factors needed, since the need for, and utilization of, health care services varies considerably among these aid categories.

Illustration 6-1 shows the distribution of beneficiaries among these four aid categories for California's fee-for-service Medicaid program, and for the PHP program. It can be seen that these distributions differ significantly between the two programs, and also that the per capita cost of health services varies significantly across aid categories. This is the reason that either (1) rates should be set separately for each of the aid categories, or (2) if there is an aggregate rate for a Medicaid-contracting HMO, it must be adjusted to the aid category mix for that HMO.

In the rate analysis for FY 77-78, California added age and sex as demographic factors for the AFDC aid category, and the intention is to use age/sex factors in all subsequent rate analysis. Following are the age/sex classes used during FY 78-79 rate development:

Illustration 6-1: Aid Category Distributions, California Medicaid Program

	AFDC (1)	ATD (2)	OAS (3)	AB (4)	Total (5)
A. Fee-for-service*					
1. Distribution of beneficiaries	67.0%	16.5%	15.8%	0.6%	100.0%
2. Per capita cost	$40.63	$122.81	$54.44	$88.75	$56.70
3. Distribution of cost	48.0%	35.7%	15.2%	0.9%	100.0%
B. Prepaid Health plans**					
1. Distribution of beneficiaries	88.0%	7.2%	4.6%	0.2%	100.0%
2. Capitation rate	$34.89	$98.24	$45.56	$77.99	$40.03
3. Distribution of capitation	76.7%	17.7%	5.2%	0.4%	100.0%

* For July-December 1977

** For July 1977-June 1978

Males	Females
1. 0-4 years	7. 0-4 years
2. 5-14	8. 5-14
3. 15-19	9. 15-19
4. 20-24	10. 20-24
5. 25-44	11. 25-44
6. 45 +	12. 45 +

Other age strata could be used with no appreciable change in aggregate affect (the choice of sex strata appears limited, however). The important consideration is to isolate very young children of either sex and women of child-bearing age from the remaining AFDC population. It is also the case that between infancy and puberty males are higher users of health care than females. In Chapter 7 we present statistics showing the relative health care costs by age/sex category.

Further demographic stratification of the adult aid categories (ATD, OAS, and AB) has not been attempted in California's program. The ATD category is particularly in need of actuarial research because all members of this category have special medical care requirements by definition.

Categories of Service

In Illustration 6-2 we present two examples of health care service classifications. The more extensive list represents the categories now used in California for routine reporting for Medicaid-contracting HMOs. (See Appendix 1 for the specific reporting requirements.) The condensed list is the classification we decided was sufficiently specific for FY 78-79 rate analysis.

A primary consideration in deciding upon a service classification is to isolate the major cost categories. From this standpoint, the "hospital inpatient" category might well be broken down into even finer substrata than given in either of the sample classifications. Following are the other considerations to be taken into account when defining a service classification:

1. The classification will have utility only if it is possible to develop both utilization and cost assumptions for each category; or at least to develop an estimate of the per capita cost for each category.

2. If the "community rate adjustment" approach is used, there will need to be a service category for each part of the benefit package for which there is a difference between Medicaid-covered services and services used by the HMO in calculation of its community rate.

Illustration 6-2: Examples of Service Classifications Used in California PHP Program

1. Reporting categories		2. Used for FY 78-79 Rate-Setting
1. Physician care a) Office b) Home c) Outpatient surgery d) Consultation e) Other MD/DO f) Physician extenders	9. Home health care	1. Physician
2. Dental care	10. Infections/Immunizations	2. Dental
3. Vision care	11. Pharmaceutical services	3. Hospital outpatient
4. Mental health outpatient care	12. Hospital inpatient a) Obstetrical b) Newborn c) Other	4. Radiology
5. Hospital	13. Inpatient surgery	5. Laboratory
6. Radiology	14. SNF/ICF services	6. Pharmacy
7. Laboratory	15. Medical transportation	7. Hospital inpatient
8. Specialized therapy a) Physical b) Speech c) Hearing	16. Medical supplies	8. Long term care
	17. Other medical	9. Other

The meaning of these considerations should become clearer as we proceed to the examples in this chapter.

Cost Categories

Each category of service implies a cost category. That is to say, if we are using "obstetrical hospitalizations" as a category of service, then "cost per obstetrical hospitalization" or "cost per obstetrical day" (the latter would be the common unit for measuring inpatient utilization) would be the related cost category. Again, this is because our fundamental approach calls for matching a health service utilization rate with a unit cost for each category of service.

For administrative costs, however, there is no related health service utilization rate. The specificity with which these costs are classified will depend on the single state agency's judgment about the degree to which it wants to, and is able to, take such costs into account when determining the capitation rate. Illustration 6-3 shows the G&A cost reporting categories used in California. For rate-setting analyses thus far, G&A has been treated as one category.

METHOD 1: COST MODELING

The cost modeling approach to rate analysis calls for the development of utilization and cost assumptions for each category of service, for each demographic category. Of the three approaches we will illustrate in this chapter, it is the one that makes fullest use of the DUC model concepts presented in Chapter 3. We will illustrate this approach with actual data taken from California's AFDC rate development for FY 78-79.

Illustration 6-4 shows the cost model. In this instance, "demographic" is translated to mean "AFDC aid category" (although in the analysis from which this example is taken there was subsequent age/sex adjustment by the method described in Chapter 7). The utilization and cost classifications are shown in the illustration.

The term "assumptions" is used here with respect to utilization and cost estimates in order to communicate the inevitable uncertainty about predicting the future. (We are, after all, predicting what the utilization and cost experience will be during the coming contract year.) There is, however, an analytical base for these assumptions.

In this example, the utilization and cost assumptions are based on statistics reported by California's Medicaid-contracting HMOs, representing their previous experience with Medicaid members. Illustration 6-5 shows how the utilization assumptions were derived, using three of the categories of service as examples. (The same method was followed for the others.)

Illustration 6-3: General & Administrative Cost Categories Used in California PHP Program

1. Marketing
2. Data processing
3. Legal and accounting
4. Interest
5. Supplies
6. Travel
7. Salaries
8. Insurance
9. Taxes and licenses
10. Telephone and telegraph
11. Utilities
12. Rent and/or lease
    a) Building
    b) Equipment
13. Repairs and maintenance
14. Continuing professional education
15. Peer review
16. Health education
17. Other

Note: In California's FY 78-79 rate-setting, these costs were aggregared into one G&A category.

Illustration 6-4: AFDC Cost Model From California FY 78-79 Rate Analysis

Category of Service (1)	Utilization Assumptions (2)	Cost Assumptions (3)	Cost Per Member-Month* (4)
1. Physician	3710	$ 38.97	$ 12.05
2. Dental	786	25.97	1.70
3. Hospital outpatient	150	113.66	1.42
4. Radiology	430	30.55	1.09
5. Laboratory	2244	8.16	1.54
6. Pharmacy	3377	5.47	1.54
7. Hospital inpatient	335	299.40	8.36
8. Long term care	4	36.09	0.01
9. Other	820	23.50	1.61
10. Total health care costs			29.32
11. General & administrative			7.47
12. Total			$ 36.79

*Since the figures in Col. 2 are expressed in terms of units/1,000 members/year, the number in Col. 4 is calculated as (Col. 2 X Col. 3)/12000.

Illustration 6-5: Examples of Utilization Assumption Development

	Avg No. of AFDC Members (1)	.....Category of Service........ Physician (2)	Pharmacy (3)	Hosp Inpt (4)
1. HMO-reported utilization*				
a) HMO A	49,369	3541	3098	337
b) HMO B	4,871	3733	2862	95
c) HMO C	1,973	4188	4567	242
d) HMO D	2,894	4678	3840	315
e) HMO E	5,369	3062	3641	389
f) HMO F	4,907	3656	5867	336
g) HMO G	10,205	3216	3130	241
2. Weighted average, excluding extremes		3533	3216	319
3. Plus 5%		3710	3377	335

* Units: encounter/1,000/year for physician; services/1,000/year for pharmacy; days/1,000/year for hospital inpatient.

** Extreme values are underlined in each of Columns 2, 3, and 4. Average is weighted by membership figures in Column 1. For example, for "Physician" the computation was:

$$\frac{(49{,}369 \times 3541) + (4871 \times 3733) + (1973 \times 4188) + (4907 \times 3656) + (10205 \times 3216)}{49369 + 4871 + 1973 + 4907 + 10205}$$

$$= 3533$$

After reviewing the methods by which each of the 13 Medicaid-contracting HMOs developed utilization and cost statistics, we determined that only seven were reporting dependable information. Fortunately, these seven covered 75% of the total Medicaid HMO membership in the state. As indicated by Illustration 6-5, the utilization assumptions were derived by taking the weighted average of the HMO-specific utilization rates (weighted by membership count), after excluding the highest and lowest rates within each category. This was a simple version of a common statistical technique of excluding extreme values, on the reasoning that they are most likely to represent a high degree of error.

Then, 5% was added to the weighted average. This was a way of recognizing that, in concept, there is a "confidence interval" representing probable predictive error. Adding 5% means that we are more willing to chance a higher capitation rate than absolutely necessary, than we are to chance a lower rate than is necessary. The former error may cost us dollars; the latter would have the cost of financial jeopardy to the HMO and/or insufficient service to the Medicaid members. Since the HMO Medicaid capitation rates in California are in the neighborhood of 15-20% below fee-for-service Medicaid per capita costs, we are comfortable with this 5% allowance for "risk."

The cost assumptions were developed in similar fashion, by taking a weighted average after excluding extremes. In this case, however, there was allowance for inflation rather than a 5% risk factor. Illustrations 6-6 and 6-7 show the steps in this process.

Developing Cost Models Without Experience Data

The cost model in Illustration 6-4 was based on data from a group of California's Medicaid-contracting HMOs, and was used to develop capitation rates for those same HMOs. Many states will have little or no experience data from the potential contractors for which they are trying to establish rates, and it will be necessary instead to develop utilization and cost assumptions from experience in other settings. This calls for more ingenuity and more subjective judgment, but there has been enough information accumulated about HMO experience generally to make it possible.

Regardless of the sources of information, the essence of the "cost model" approach is to develop both utilization and cost assumptions that, when multiplied together, result in a capitation rate. We will now look at ways of doing this with generally-available statistics, rather than with data from previous experience of the contracting organizations for which rates are to be set.

Illustration 6-6: Examples of Cost Assumption Development

Category of Service (1)	A (2)	B (3)	C (4)	D (5)	E (6)	F (7)	G (8)	Total, excluding extremes* (9)
1. Physician								
a) Units	3,695	56,625	17,869	2,398	4,812	5,582	10,725	79,025
b) Units/1,000/yr	4,890	3,930	8,114	4,401	3,067	4,350	4,315	4,055
c) Cost (000)**	$ 103	$1,997	$ 439	$ 74	$ 228	$ 214	$ 498	$ 2,886
d) Cost/unit	$27.88	$35.27	$24.55	$30.91	$47.35	$38.33	$46.45	$ 36.52
2. Pharmacy								
a) Units	3063	66,868	10,328	3,412	8,012	8,773	10,239	91,683
b) Units/1,000/yr	4,792	4,430	4,682	6,360	4,714	7,160	4,086	4,770
c) Cost (000)	$15.0	$357.9	$58.1	$17.8	$29.0	$45.4	$18.1	$477.8
d) Cost/unit	$4.90	$5.35	$5.63	$5.21	$3.62	$5.17	$1.77	$5.21
3. Hospital inpatient								
a) Units	306	7,010	603	229	721	527	869	2,652
b) Units/1,000/yr	344	468	271	396	443	412	361	381
c) Cost (000)	$85.0	$1,856.4	$193.8	$38.2	$217.3	$108.3	$271.8	$720.5
d) Cost/unit	$278	$265	$321	$117	$301	$205	$313	$271.69
4. G & A								
a) Avg enrollment	3,281	56,313	8,885	2,178	6,227	5,281	10,899	79,987
b) Cost (000)	$16.4	$315.8	$48.9	$6.8	$54.0	$20.5	$96.0	$455.7
c) Cost/member-month	$5.01	$5.61	$5.51	$3.10	$8.67	$3.88	$8.81	$5.70

* The excluded values are underlined. For health care service categories (lines 1-3) the exclusions were the highest and lowest in terms of units/1,000/year (line b). For G&A, the highest and lowest cost/member-month were excluded.

** Costs are recorded in thousands of dollars.

Illustration 6-7: Adjustment of Cost Assumptions For Inflation

Category of Cost (1)		Base Period Cost Per Unit (2)	CPI Component (3)	Inflation Rate (4)	Estimated FY 78-79 Cost (5)
1.	Physician	$ 36.52	All items	6.7%	$ 38.97
2.	Dental	24.34	All items	6.7	25.97
3.	Hospital outpatient	103.14	Hosp serv	10.2	113.66
4.	Radiology	28.63	All items	6.7	30.55
5.	Laboratory	7.65	All items	6.7	8.16
6.	Pharmacy	5.21	Drug & Rx	4.9	5.47
7.	Hospital inpatient	271.69	Hosp serv	10.2	299.40
8.	Long term care	33.17	Med care	8.8	36.09
9.	Other	22.02	All items	6.7	23.50
10.	General & admin.	7.00*	All items	6.7	7.47

* The G&A figure of $5.70 derived in Illustration 6-6 was augmented by $1.30, which was designated as allowance for profit and reserves. The $1.30 represents 5% of the total health care costs per member-month.

Utilization Assumptions

The most direct way to develop utilization assumptions is to accumulate HMO use statistics from as many sources as are available. Many of these statistics will be of dubious comparability--they may not represent a Medicaid population, they may be from a different part of the country, and definitions may vary. By arraying a series of such numbers, however, and by making adjustments where possible, a range of reasonable utilization rates can be identified.

In Illustration 6-8 we show how a utilization rate from one setting--in this case, hospital inpatient utilization for Kaiser in Northern California --can be adjusted to a Medicaid AFDC population. The ability to make such adjustments will depend upon the specificity of utilization statistics available from various sources.

In Illustration 6-9 we list a series of hospital utilization statistics, each taken from a different source. The illustration also includes commentary representing the reasoning an actuary might apply to derive a single assumption from this series of numbers.

Note that there is no formula used to combine the various utilization statistics into a single assumption (as there was in developing the assumptions in Illustration 6-3). Two different analysts would probably come up with two different assumptions. Still, it is unlikely that an AFDC hospital utilization assumption would fall outside the range of 250-350 days/1,000/year. This represents a "confidence interval" of plus or minus 17% for hospital inpatient utilization.

If the subjective nature of this process causes discomfort, it is possible to assess the overall impact of error in each of the assumptions. We will illustrate this process by referring once again to Illustration 6-4, where we had a hospital inpatient utilization assumption of 335 days/1,000/year, at $300 per day. A 15% error in the utilization assumption would be 0.15 X 335 = 50, which translates into a cost per member-month of (50 X $300)/12,000 = $1.25. This amounts to 3.4% of the capitation rate of $36.79.

Thus, even a substantial error in one component would contribute relatively little error to the aggregate capitation rate. Of course, if several components all had substantial error in the same direction, there could be significant error in the capitation rate. What usually happens, however, is that component errors tend to balance one another out.

This same type of analysis will need to be carried out for each of the categories of service used in the cost model, in order to complete the picture shown in Illustration 6-4. For some categories of service it may be difficult to find reference statistics. As a last resort, the

Illustration 6-8: Adjustment of Example HMO Utilization Statistic to Medicaid AFDC Age/Sex Mix

Age/Sex Category (1)	Hospital Inpatient Utilization Rate* (2)	AFDC Age/Sex Distribution (3)	Expected Days Per 1,000 AFDC (4)
1. Male, 0-19	154 days/1000/yr	35.0%	53.9
2. " 20-44	198	1.7	3.4
3. " 45-64	725	0.4	2.9
4. Female, 0-19	137	37.4	51.2
5. " 20-44	501	23.5	117.7
6. " 45-64	694	2.0	13.9
Total	329	100.0%	243

243/329 = 74%

* Kaiser, Northern California

Illustration 6-9: Hospital Utilization Rates in Various HMO Settings

Source & Rate

1. Federal HMO report for Oct-Dec 77:
   - a) Group practice models... 390 days/1,000/yr
   - b) IPA models... 458
   - c) Staff models... 420

   Comment: For all members, not Medicaid only. Probably represents few people 65 or older, so should be roughly comparable to AFDC population.

2. Kaiser, Northern California: (from Ill. 6-8):
   - a) Private members... 329
   - b) Adjusted to AFDC age/sex mix... 243

   Comment: The adjusted rate is exceptionally low, and raises the question of obstetrical admission rate for AFDC vis-a-vis private members. The ratio of these two rates--243/329 = 74%--can be considered a measure of the utilization reduction to be expected when adjusting from a private HMO membership to an AFDC population.

3. California PHP program, FY 78-79 assumption for AFDC... 335

   Comment: Based on AFDC experience in seven HMOs.

4. Kaiser, Oregon:
   - a) Private members, under 65... 360
   - b) OEO members, under 65... 389

   Comment: The OEO membership will not be comparable to AFDC in terms of age/sex mix.

If we apply the 74% ratio derived from Section 2 to the Federal HMO report figures in Section 1, we obtain rates of 289, 339, and 311 for the three models. If we apply the ratio to the OEO rate in Section 4, we obtain a rate of 288. Using these adjusted figures, this gives us a range from 243 to 339. The average of the adjusted figures is 294.

The only statistic here based on actual AFDC experience is the 335 rate in Section 3. This was calculated as a weighted average plus 5% (see Ill. 6-5), and the average prior to the 5% increase was 319. This falls well within the range of adjusted values, and only about 10% above the average of those values.

In spite of the disparity of sources of these statistics, then, it appears that an assumption in the range of 300 to 350/days,1,000/year would be sufficient for AFDC.

missing categories can be filled in with statistics from the State's fee-for-service Medicaid program. In our experience, it is rare that the HMO utilization rate for a given category of service exceeds the fee-for-service rate, so setting the assumption at the fee-for-service level should be conservative in the sense of protecting the HMO from excess costs.

This leads to an alternative approach to developing the utilization assumptions: begin with fee-for-service utilization statistics from the Medicaid program, then adjust them for the expected HMO impact on utilization patterns. It has been well established, for example, that HMOs reduce inpatient hospital utilization. The inpatient assumption can be derived by starting with the fee-for-service utilization rate and assuming a percentage reduction in the HMO setting.

In Illustration 6-10 we show a series of findings from studies in which HMO utilization was compared with fee-for-service utilization. Let us suppose that a state has an inpatient hospital utilization rate of 830 days/1,000/year for AFDC beneficiaries under fee-for-service. On the basis of the findings listed in Illustration 6-10, it would be reasonable to assume at least a 30% reduction. This would give an assumption of 830 X 70% = 581 days/1,000/year.

The same reasoning would be applied to all other categories of service for which HMO versus fee-for-service comparisons are available.

Cost Assumptions

If data on actual costs are not available in the detail necessary to derive assumptions about cost per unit of service, the primary alternative is to use "usual and customary" charges. Ordinarily, a single state agency will know usual and customary charges as a result of the analyses used to derive the fee-for-service Medicaid payment levels. Indeed, the Medicaid reimbursement per unit of service under fee-for-service is a reasonable starting point for HMO cost assumptions.

If the utilization assumptions also start from a fee-for-service reference point--using the second alternative described above--then it should be possible to derive unit cost figures within the same category of service definitions. Illustration 6-11 shows how this can be done.

A major issue in using the "usual and customary" charges as the basis for unit cost assumptions, is the extent to which such charges incorporate what would in an HMO setting ordinarily be categorized as administrative costs. For example, if $35 is the average cost per physician claim in a fee-for-service Medicaid program, a substantial part of that $35--probably half--represents equipment, supplies, ancillary personnel, rent, etc. In an HMO setting these costs would probably be categorized under "general and administrative." Since the health

Illustration 6-10: Examples of Prepaid vs. Fee-For-Service Hospital Utilization Comparisons

1. California PHP program, rate analysis for FY 78-79; comparison of hospital days/1,000/year for four Medicaid aid categories:

Aid Category (1)	Prepaid (2)	FFS (3)	Ratio (4)
AFDC	319	749	0.43
ATD	1211	3510	0.35
OAS	1548	3195	0.48

2. Gaus, Cooper & Hirschman found hospital use in group practice plans to be 38% of that in a fee-for-service control group for Medicaid beneficiaries (Gaus CR, Cooper BS and Hirschman CG: Contrasts in HMO and fee-for-service performance. Social Security Bulletin, May 1976, p. 8.)

3. Enrollees in group practice plans were hospitalized less than half as many days in 1973 as those in Blue Cross-Blue Shield and Aetna. (DHEW, SSA: Medical care expenditures, prices & cost: background book. September 1975, page 96)

4. Utilization studied before and after enrollment in a prepaid group practice showed a 32% decrease in hospital days. (DHEW, Health Services Administration: Report on a study of medical utilization of services in a prepaid group practice health plan, January 1976, p. 96.)

5. Comparison of Federal employee health benfit program plans found 43% fewer hospital admissions per thousand in a group plan than in a provider plan. (DHEW, Health Resources Administration: Federal employees health benefits program utilization study. Publication number (HRA) 73-3125, January 1975, p. 20.)

6. Roemer et. al. found 53% fewer hospital days per thousand in a group practice plan than in a provider plan; 36% fewer than in a commercial plan. (Roemer MI et. al.: Services, expenditures & attitudes under three types of plans. Research series no. 16, University of Michigan, 1972, p. 46.)

7. Surgical hospitalization rates were 18% lower in a study comparing Health Insurance Plan of Greater New York with Blue Cross-Blue Shield. Comparing HIP vs. a plan allowing free choice of physicians found surgical hospitalizations 43% lower in HIP. (Donabedian A: An evaluation of prepaid group practice. Inquiry, 6:3, 1969, p. 12.)

Illustration 6-11: Utilization and Cost Assumptions Derived From Fee-For-Service Statistics for AFDC (1)

Category of Service (1)	........Utilization Assumptions(2).........			Fee-For-Service Cost per Unit (5)	Cost Per Member-Month (6)
	Fee-For-Service (2)	Adjustment Factor (3) (3)	HMO (4)		
1. Hospital inpatient	749	0.70	524	$290	$12.66
2. Hospital outpatient	1287	0.20	257	39	0.84
3. Professional services	4474	1.40	6264	33	17.23
4. Dental	644	1.20	773	58	3.74
5. Pharmacy	5007	0.70	3505	8	2.34
6. Subtotal					$36.81
7. Fee-for-service cost per beneficiary-month for all other services...					0.42
8. Total estimated health care costs for HMO...					$37.23 (4)

Notes:

(1) These figures reflect California Medicaid experience for July-December 1977.

(2) The units are claims for hospital outpatient, professional services (physician, lab, other professional), dental and pharmacy; days for hospital inpatient.

(3) These adjustment factors would be derived from reference statistics such as those shown in Illustration 6-10. Note that for some categories HMO utilization is assumed to be higher than fee-for-service. The "HMO" assumption is the product of the fee-for-service utilization rate (Column 2) and the adjustment factor (Column 3).

(4) To finish derivation of a capitation rate, an administrative cost assumption would need to be added to this number.

care field does not have uniform charts of accounts nor uniform cost allocation methods (except for hospitals in certain areas), it is impossible to separate administrative costs from "true" health care costs.

During the FY 77-78 rate analysis in California, which was before we had dependable data on actual costs, we used the "usual and customary" approach to unit cost assumptions. We set the "administrative" cost assumptions so that it amounted to 15% of the total capitation rate, and we also identified a 2% "reserve" cost. When actual cost data subsequently became available, those data indicated that these were reasonable assumptions in general. Illustration 6-4, which is from the FY 78-79 analysis, includes a "general and administrative" allowance of $7.47 per member-month, which is derived from actual costs, and amounts to 20% of the total capitation rate of $36.79 for AFDC. For the three adult aid categories the same "general and administrative" cost figure of $7.47 was used, but since the health care costs for these categories were much higher than for AFDC, the G&A percentage was considerably lower for all four aid categories taken together. In fact, the G&A percentage for all four aid categories combined was 17%.

The California experience also tends to substantiate the common-sense expectation that small HMOs have a higher G&A percentage cost than do large HMOs. The HMO licensure laws in California set benchmarks of 25% of total cost for G&A for plans of less than 10,000 membership, and 15% for larger plans. As we have noted, since there is no standardized HMO cost accounting these must still be considered rather arbitrary criteria, even if embodied in law.

Summary of Cost Model Approach

The essence of the cost modeling approach is to define, for each category of service, a utilization assumption and a cost per unit of service assumption. Ideally, these assumptions would be based on actual experience data from the contracting HMOs, but for most states such data will not be available.

This means that the utilization and cost assumptions must be derived by inference and judgment--sometimes judgment bordering on instinct--from information generated in other settings. This is a situation in which an actuarial consultant is specially valuable. A competent consultant will have had considerable experience in making the requisite judgment and will also have accumulated statistics from a variety of settings.

When a state embarks on a program of Medicaid contracts with HMOs, the first order of business should be to establish uniform reporting requirements, so that rate-setting analyses in subsequent cycles can draw primarily on direct experience data. Even as such data become available, however, we recommend that statistics from other sources continue to be used as benchmarks.

METHOD 2: BUDGET MODELING

Simply stated, budget modeling means (1) predicting the resources that will be needed, and (2) costing out those resources. Illustration 6-12 shows a general clinic budget model for an HMO, using an assumed 25,000 enrollees.

It can be seen from the illustration that the "budget" is built up from rules of thumb that relate resource needs to population size (e.g.: one physician for every 1,100 enrollees) or resource needs of one type to resource needs of another type (e.g.: 3.5 clinic staff members for each MD). Other indicators are expressed in terms of dollars, such as $12,000 in malpractice insurance per MD per year, and these obviously will change with the effects of inflation, and will vary from one part of the country to another.

As the name of this method implies, the general idea is to use the same type of reasoning that goes into development of an annual budget for deriving capitation rates. For large, well-established HMOs--particularly for HMOs with relatively small Medicaid and/or Medicare involvement--this may suffice as a rate-setting method. The resource needs of the membership population will not change significantly from year to year (on a per capita basis), so there is little danger in using a method that is less precise than the cost modeling method illustrated above.

We recommend that budget modeling not be used as the sole method of determining rates, but instead be viewed as a technique for evaluating rate proposals initiated by HMOs and/or checking the reasonableness of the state's own cost model analysis. See the reference list at the end of this chapter for sources of information that can be used to apply the budget model approach.

METHOD 3: COMMUNITY RATE ADJUSTMENT

In Chapter 5 we discussed the use of an HMO community rate to establish a maximum for Medicaid capitation rates. We will now carry that discussion further, to consider the community rate as a basis for the Medicaid capitation rate itself.

Illustration 6-12: Generalized Clinic Budget Model for 25,000 Enrollees

Item and Basis (1)	Number for 25,000 Enrollees (2)	Estimated Unit Cost (3)	Annual Cost (4)	Monthly Per Enrollee (5)
a. Physicians (1) 1:11 enrollees	22.7	57,000[1]	1,305,250	
b. Other Clinic Staff (2) 3.5 per M.D.	79.5	14,375[2]	1,142,813	
c. Referrals 100/1,000 enrollees/year	2,500	60	150,000	
d. Referred diagnostic 10% of services				
X-ray	1,000	60	60,000	
Lab	6,250	10	62,500	
Other	-	-	12,500	
e. Rent, etc. (3) 1,000 sq. ft./M.D.	22,700	12[3]	272,400	
f. Supplies, etc. $4 per clinic visit	87,500	4	350,000	
g. Depreciation $3,000/M.D./year	22.7	3,000	68,100	
h. Malpractice insurance $12,000/M.D./year	22.7	12,000	272,400	
i. Other			275,000	
			$3,995,963	$13.24

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[1] $50,000 avg. salary plus 15% fringe

[2] $12,500 avg. salary plus 15% fringe

[3] [illegible] phone, taxes, rent, upkeep, etc.

In the first two rate analysis methods discussed here--cost modeling and budget modeling--the term "model" has been used to connote the fact that the anlaysis develops a generalized picture of expected utilization rates and unit costs for a Medicaid population. Community rate adjustment, on the other hand, begins with statistics developed by a specific contracting (or potentially contracting) HMO. This specificity is one of the advantages of this rate analysis alternative.

The development of a community rate is part of the application process for every federally qualified HMO, which means that the information needed to use this method should be available for most Medicaid-contracting HMOs. (The only exceptions would be federal grantee organizations, such as Neighborhood Health Centers, which are exempt from the Federal qualification requirement.) Availability of information is another advantage of this approach. But there are constraints as well as advantages:

1. The community rate is the HMO's own analysis of its revenue needs, and also reflects the HMOs perceived competitive position in the private health care marketplace. For a given HMO the rate may be set low in order to enhance the competitive position or (in situations of little competition) high in order to increase profitability.

2. For purposes of federal qualification, review of the community rate is oriented to assurance of fiscal viability rather than maximum efficiency, which may result in a rate that is higher than a state Medicaid Agency deems necessary.

3. The community rate will be oriented to a general population rather than the Medicaid population, so adjustments will be needed to develop an equivalent rate for Medicaid. As noted in Chapter 5, such adjustment involves consideration of benefit package content and differential demographic characteristics (hence health care needs) of the Medicaid and "community" populations.

In short, the community rate itself--a figure of, say, $35.00 per member-month for a standard benefit package--is not useful for developing a Medicaid capitation rate. However, the existence of a community rate implies the availability of the information used to derive it, and that information *will* be useful for Medicaid rate analysis. That information will include, either explicitly or implicitly (and all too often it will be implicitly), the utilization rates and unit costs by category of service that we have characterized as the DUC model.

In point of fact, most HMOs will use either a cost modeling or budget modeling approach to establishment of the community rate. Thus, "community rate adjustment" is not conceptually different from whichever of these methods has been used to develop the community rate. The difference lies in the subsequent steps: (1) review by the single State agency of reasonableness of the assumptions used to develop the community rate, and (2) adjustment of those assumptions to the Medicaid population.

Community Rate Based on Cost Model

If the HMO has used a cost model to develop its community rate--that is, if there is explicit statement of utilization and unit cost assumptions for each category of service--we can use techniques already described to check reasonableness and make adjustment to the Medicaid population. For example, if the hospital inpatient utilization assumption is 750 days per 1,000 members per year, the statistics shown in Illustration 6-9 would lead us to question the reasonableness of the figure.

Or, if the hospital inpatient assumption were considered to be reasonable--say, 410 days/1,000/year--we could use the analysis illustrated in Illustration 6-8 to adjust this figure to the Medicaid AFDC population. That analysis implies that adjusting a general population hospital utilization rate to the AFDC age/sex mix produces a 26% reduction. We would adjust the community rate assumption of 410 days/1,000/year to 410 X 74% = 303.

The cost assumptions used to develop the community rate may be checked for reasonableness by comparing with fee-for-service costs per unit of service, with "usual and customary" fees, or with similar cost assumptions from other HMOs. Be prepared, however, for problems in category of service definitions. For example, in most fee-for-service Medicaid programs, laboratory services billed directly by physicians will be included under a "Physician" category, while independent laboratory billings will be in a different category. For an HMO, all laboratory expense will probably be treated as a single cost center.

It probably is not a good idea to try adjusting cost assumptions to characteristics of the Medicaid population. It may well be, for example, that the average hospital day for a Medicaid member has a different cost from the average hospital day for a private member, but (1) it would be very unusual to have enough information to even estimate the difference, and (2) the magnitude of difference is likely to be well within the usual tolerance levels for actuarial precision.

Community Rate Based on Budget Model

In Illustration 6-12 we saw a partial budget model, covering estimated clinic costs. Chapter 5 contains a somewhat different representation of a budget model, in which the projected costs for each major cost center were converted to a cost per member-month. If this is the basis on which the community rate was derived, adjustment of the community rate to the Medicaid population would be done in the manner illustrated in Chapter 5.

There we considered the object of the adjustment to determine a rate maximum, but we can also treat the result as the rate itself.

Review of a budget-based community rate--in particular, evaluating the reasonableness of the budget assumptions--may take the rate analysis into a sensitive policy area. The budget assumptions will reflect salary levels, purchase and rental agreements, and in some cases anticipated profits. Assessing the reasonableness of the budget will, if taken beyond a prima facie level, mean deciding whether the Medicaid agency wants to support these "internal" arrangements at the levels assumed. Is it reasonable, for example, for the Executive Director of an HMO to have a salary of $100,000?

Many HMO theoreticians believe that this is not the kind of question that a government contracting agency should ask, because it represents undue interference in the internal affairs of the HMO. If the Medicaid capitation rate is substantially less than fee-for-service Medicaid per capita costs, and if it appears that the Medicaid members are being served adequately, then (according to this school of thought) the government agency should not inquire into the internal use of funds.

On the other hand, following this philosophy in the early years of California's PHP program lead to severe criticism from State and Federal legislators, and a few rather dramatic instances of profiteering. It is clearly the California Legislature's expectation, and it also appears to be the prevailing Congressional view, that a single State Medicaid agency should look very closely at the internal financial arrangements of a Medicaid-contracting HMO.

This is not a technical rate-setting issue, and we will not dwell on it here. It is, however, an issue that is inevitably associated with rate analysis, either purposefully or by default. It should be recognized as a major policy question, and decided by program managers rather than by staff analysts.

OPERATIONAL STRATEGY

Until a single State agency acquires data from its own experience with Medicaid-contracting HMOs, rate analysis will be akin to an intelligence operation. It means gathering information from whatever sources appear to have relevance to the proposed Medicaid contract, adjusting the statistics when possible, and making rather subjective, "ball-park" estimates of reasonable utilization and cost assumptions. Given this situation, the "community rate adjustment" approach to rate analysis has three important strategic advantages, as follows:

1. The actuarial analysis underlying the community rate has been done by the HMO or a consultant to the HMO. For a state with no experience in this type of rate analysis, it is a practical advantage to have another party take on the initial analytical burden.

2. The "burden of proof" lies with the HMO. It is always easier to critique an actuarial analysis than it is to do one. By probing for the evidentiary base for the assumptions underlying the community rate, the state can not only test the reasonableness of that rate but can also learn a great deal about the state of the art of rate development.

3. By discovering the basis for the community rate, the state will know as much as the HMO knows about its own situation.

The natural extension of this strategy is to have the HMO submit a rate proposal for Medicaid, explicitly linked to its community rate assumptions. Again, the advantages are that the HMO is responsible for the actuarial work, it must justify the analysis, and in doing so the extent of the HMO's knowledge will be declared.

These advantages will be realized, however, only if the state is prepared to be an informed and intelligent critic of the HMO's community rate assumptions. This means that the state analysts should have a clearly-defined conceptual construct within which they are approaching the rate development task, and that this construct should be made clear to the HMO. This is why we have discussed the DUC model and, in this chapter, cost modeling and budget modeling. These models represent the language with which it is possible to carry on a technical dialogue with the HMO.

The state analysts should also be as well-informed on HMO experience--Medicaid and other--as they can be from published statistics. Only by having done this homework will they be able to evaluate the reasonableness of assumptions in the HMO's community rate development. Needless to say, the state analysts should also be thoroughly familiar with the utilization patterns and costs being experienced in their fee-for-service Medicaid program as well.

SUMMARY

We have discussed two methods of developing a rate model--cost modeling and budget modeling--and the community rate adjustment approach to an HMO-specific capitation rate. Ideally, state analysts will have all of these methods at their disposal. Contracting and potentially contracting HMOs can be asked to submit rate proposals based on their community rate. The proposals should include explicit assumptions and the evidentiary base for those assumptions. The state then would use its own rate model to check the reasonableness of the HMO's rate proposal.

This approach places most of the burden of HMO-specific actuarial analysis on the contracting HMO, but still provides safeguards for the single state agency.

SOURCES OF STATISTICS USEFUL FOR RATE ANALYSIS

Organizations

Following are organizations that publish (or will supply) statistics on HMO utilization and costs.

1. Department of Health, Education and Welfare

   Single State Medicaid agencies should enlist the help of the regional HCFA staff, in order to acquire HMO utilization and cost data from DHEW sources. Following are sources in Washington, D.C. that should be of assistance:

   a) Office of HMOs
   12420 Parklawn Drive
   Rockville, MD 20857

   b) Office of Policy, Planning and Research
   330 C Street, S.W.
   Switzer Building, Room 5054
   Washington, D.C. 20201

   c) National Center for Health Statistics
   3700 East-West Highway
   Center Building
   Hyattsville, MD 20782

2. Group Health Association of America
   Education and Research Department
   6121 Pennsylvania Avenue, N.W.
   Washington, D.C. 20037

3. Health Services Research Center
   Kaiser Foundation Hospitals
   4610 Southeast Belmont Street
   Portland, Oregon 97215

4. Kaiser Foundation Health Plan
   1 Kaiser Plaza
   Oakland, CA 94612

5. California Department of Health Services

   a) PHRED Project
   455 Capitol Mall, Suite 250
   Sacramento, CA 95814

b) Alternative Health Systems Branch
Medi-Cal Division
714 P Street
Sacramento, CA 95814

6. Health Insurance Plan of Greater New York
625 Madison Avenue
New York, NY 10022

7. InterStudy
Box S
Excelsior, MN 55331

Publications

The following articles and reports contain statistics that may serve as helpful benchmarks; this is not necessarily an exhaustive list.

1. McCloud GK & Prussin JA: The continuing evolution of HMOs. NEJM, March 1973, p. 442.
2. Kimbell LJ & Yett DE: An evaluation of policy-related research on the effects of alternative health care reimbursement systems. Human Research Center, UCLA, 1975.
3. Fuller N & Patera M: Report of a study of Medicaid utilization of services in a prepaid group practice plan. DHEW, SRS, 1976.
4. Roemer MI et. al.: Services, expenditures and attitudes under three types of plans. Health Insurance Effects, Research Series No. 16, University of Michigan, 1972.
5. Gaus CR, Cooper BS, and Hirschman CG: Contrasts in HMO and fee-for-service performance. Social Security Bulletin, May 1976.
6. Greenlick MR et. al.: Comparing the use of medical care services by a medically indigent and a general membership population in a comprehensive prepaid group practice program. Medical Care 10:187, May-June 1972.
7. DHEW: An annotated bibliography of HMO utilization by Title XIX recipients, 1973.
8. Wersinger R et. al.: Inpatient hospital utilization in three prepaid comprehensive health care plans compared with a regular Blue Cross plan. Medical Care 14:721, September 1976.
9. Pineault R: The effect of prepaid group practice on physician's utilization behavior. Medical Care 14:121, February 1976.

10. Broida JH et. al.: Impact of membership in an enrolled prepaid population on utilization of health services in a group practice. NEJM 15:780, April 1975.

11. Reidel DC et. al.: Federal employees health benefits program utilization study. DHEW Publication No. (HRS) 75-3125, 1975.

12. Donabedian A: An evaluation of prepaid group practice. Inquiry, 6:3, 1969.

CHAPTER 7: ADJUSTMENT FACTORS

In this chapter we describe methods that may be used to adjust for factors that influence the cost and/or risk of a Medicaid-contracting HMO, but that are not captured explicitly in the rate-setting calculations. The following types of adjustment will be illustrated:

1. Age/sex--adjusting (a) the FFS maximum and (b) a set of standard rates, to match the age and sex distributions of an HMO's Medicaid enrollees.

2. Medicare coverage--adjusting the FFS maximum related to those aid categories for which a proportion of the beneficiaries have Medicare coverage as well as Medicaid benefits.

3. Incentive adjustments--using increments in the capitation rate as a financial incentive toward higher than minimum performance.

We will conclude the chapter with a discussion of the issue of biased selection -- the development of an enrollee population that has either higher utilization (adverse selection) or lower utilization (favorable selection) than anticipated in the rate-setting analysis, as a result of the HMO's marketing, enrollment and disenrollment processes.

1. Age/Sex Adjustment

In the language of the DUC Model (Chapter 3), age and sex are two of the demographic factors that should be taken into account when calculating the FFS maximum and when establishing capitation rates. As we noted in Chapter 4, where we describe methods of calculating the FFS maximum, the addition of age and sex to other necessary demographic factors such as aid category and service area, creates a cumbersome multiplicity of demographic categories. It is convenient to have an alternative way of incorporating age and sex effects--an age/sex index that can be used as final multiplier to adjust either the FFS maximum or standard capitation rates.

The first step in development of age/sex adjustment factors is calculation of statistics describing the relative cost of health care services by age and sex. In Illustration 7-1 we display per capita costs by age and sex group, tabulated from a sample of services rendered under the California Medicaid program.

(In the technique we are about to describe, the actual per capita values are not of significance, but the relative values across age and sex categories are. These relative values will tend to be rather similar

AFDC Beneficiaries

July 1976 - June 1977

	Age/Sex Category (1)	Percent Distribution (2)	Monthly Per Capita Cost (3)
1.	Males, 0-4	6.5%	$47.58
2.	Males, 5-14	18.9	15.17
3.	Males, 15-19	7.7	20.20
4.	Males, 20-24	1.6	27.29
5.	Males, 25-44	2.4	52.91
6.	Males, 45 +	0.9	85.73
7.	Females, 0-4	6.2	34.28
8.	Females, 5-14	18.8	12.96
9.	Females, 15-19	8.3	32.81
10.	Females, 20-24	7.5	66.18
11.	Females, 25-44	18.3	58.94
12.	Females, 45 +	3.0	60.98
	TOTAL	100.0%	$34.86

Illustration 7-1: Monthly Per Capita Cost by Age and Sex Category, California Medicaid Program

from one population to another, but we recommend that each Medicaid agency calculate these statistics from its own experience.)

These per capita costs may be thought of as standard "prices" for each age/sex group, to be used to calculate a weighted average "price" for a population of specified age/sex distribution. We show this calculation in Illustration 7-2, where we calculate the "price" of the age/sex distribution of all AFDC beneficiaries enrolled in Medicaid-contracting HMOs in California as of April 1978. The important point here is this: the aggregate "price" for the HMO-enrolled population differs from the aggregate figure of $34.86 at the bottom of Column 2 only because of the age/sex distribution shown in Column 3. Therefore, the ratio between $34.31 and $34.86 is a measure of the relative costliness, everything else being equal, of that age/sex distribution.

The ratio $34.31/$34.86 = 0.984, then, indicates that the average AFDC population enrolled in HMOs in California could be expected to be only 98.4% as expensive as the AFDC population not enrolled. This suggests a small degree of favorable selection.

This same calculation can be repeated for each of the Medicaid-contracting HMOs, to derive an index of the cost effect of the difference between the HMO's AFDC enrollees and the fee-for-service AFDC population. Similarly, we can measure the effect of age/sex differences among the HMOs, by finding the ratio of each HMO's standard "price" to the "price" for all HMOs aggregated. Both calculations are shown in Illustration 7-3.

Column 3 in this illustration contains FFS-based adjustment factors for each HMO,which can be used to adjust the FFS maximum to the age/sex mix of the HMO. If we assume that the FFS maximum for Los Angeles County has been calculated to be $48.00 for AFDC, the FFS maximum for each HMO located in that county can be calculated simply by using the FFS-based adjustment factor as a multiplier, as follows:

1. HMO A: $48.00 X 1.009 = $48.43
2. HMO F: $48.00 X 0.982 = $47.14
3. HMO M: $48.00 X 0.932 = $44.74

Similarly, if we assume that a standard AFDC capitation rate of $38.40 has been established for all HMOs, the rate can be adjusted to the age/sex mix of each HMO by using the HMO-based adjustment factors from Illustration 7-3. In this application of the adjustment factors, we recommend that they be applied only to that portion of the capitation rate which is considered to represent health care costs, in contrast to administrative costs. In California's last rate-setting cycle, we attributed 17% of the capitation rate to administrative expense (other than the types of administrative costs that might be realized by fee-for-service providers), so the age/sex adjustment factors were applied to only the remaining 83%. This can be illustrated as follows:

	Age/Sex Category (1)	FFS Per Capita Cost (2)	Distribution of Enrollees* (3)	Cost at Col. 2 Rates (4)
1.	Male, 0-4	$47.58	11,695	$556,448
2.	Male, 5-14	15.17	22,074	334,863
3.	Male, 15-19	20.20	5,122	103,464
4.	Male, 20-24	27.29	473	12,908
5.	Male, 25-44	52.91	1,267	67,037
6.	Male, 45+	85.73	442	37,893
7.	Female, 0-4	34.28	11,207	384,176
8.	Female, 5-14	12.96	21,898	283,798
9.	Female, 15-19	32.81	7,483	245,517
10.	Female, 20-24	66.18	9,013	596,480
11.	Female, 25-44	58.94	17,425	1,027,030
12.	Female, 45+	60.98	2,223	135,559
	TOTAL	$34.86	110,322	$3,785,173

$34.31

*As of April 1978

Illustration 7-2: Expected Cost of HMO Age/Sex Mix at FFS Per Capita Costs, AFDC

HMO (1)	"Price" of Age/Sex Mix* (2)	FFS-Based Adjustment Factor** (3)	HMO-Based Adjustment Factor*** (4)
A	$35.17	1.009	1.025
B	35.07	1.006	1.022
C	35.03	1.005	1.021
D	34.89	1.001	1.017
E	34.55	0.991	1.007
F	34.23	0.982	0.998
G	33.92	0.973	0.989
H	33.64	0.965	0.980
I	33.33	0.956	0.971
J	32.98	0.946	0.961
K	32.97	0.946	0.961
L	32.80	0.941	0.956
M	32.49	0.932	0.947

* Per capita cost at age/sex-specific costs from Illustration 7-1.

** The ratio of the "price" in Col. 2 to $34.86

*** The ratio of the "price" in Col. 2 to the aggregate HMO "price" of $34.31 (Illustration 7-2).

Illustration 7-3: Age/Sex Adjustment Factors for each HMO, AFDC Enrollees

1. $38.40 x .83 = $31.87 for health care costs;
   $38.40 x .17 = $ 6.53 for administrative costs.

2. HMO A: $31.87 x 1.025 = $32.03
   + 6.53
   $38.56

3. HMO F: ($31.87 x 0.998) + $6.53 = $38.34

4. HMO M: ($31.87 x 0.947) + $6.53 = $36.71

Note that there has been an implicit assumption in the above process: that the cost relationship among age/sex groups under fee-for-service (the source of our standard "prices") is the same as the cost relationship among age/sex groups under prepaid health care delivery. The assumption was adopted for the pragmatic reason that we do not have per capita cost statistics by age, sex, and aid category from HMO experience. We believe that the results are, like many other aspects of actuarial work, close enough for practical purposes, but this assumption is certainly one that should be tested when detailed utilization and cost data become available from Medicaid HMO experience.

Also note the variation in adjustment factors among HMOs, displayed in Illustration 7-3. The factors vary over a range of more than 10 percentage points, which we consider evidence that age and sex do need to be taken into account in rate-setting calculations.

Age/sex distributions (or, to be more precise, the cost effect of age/sex distributions, as measured by these adjustment factors) tend to remain relatively stable over time. In Illustrations 7-4 and 7-5, we present changes over a year in (a) age/sex adjustment factor and (b) number of AFDC enrollees, for two of California's Medicaid-contracting HMOs. It can be seen that the age/sex factors remained relatively constant even though one of the HMOs had a significant loss in AFDC enrollment, and the other had a significant gain. This is comforting for the analyst trying to predict phenomena a year or more into the future.

2. Medicare Coverage

Medicaid beneficiaries in the ATD, OAS, and AB aid categories may also have Medicare coverage. In California, virtually all OAS beneficiaries have Medicare coverage, about 30% of the ATD category have Medicare, and 50% of AB. Medicare coverage must be taken into account both in the FFS maximum calculation and the calculation of rates.

If the FFS maximum calculated for an HMO is based on a fee-for-service per capita cost that includes both Medicare and non-Medicare beneficiaries, the Medicare/non-Medicare mix of the HMO enrollees must also be

Illustration 7–4: Change in Age/Sex Mix, HMO L

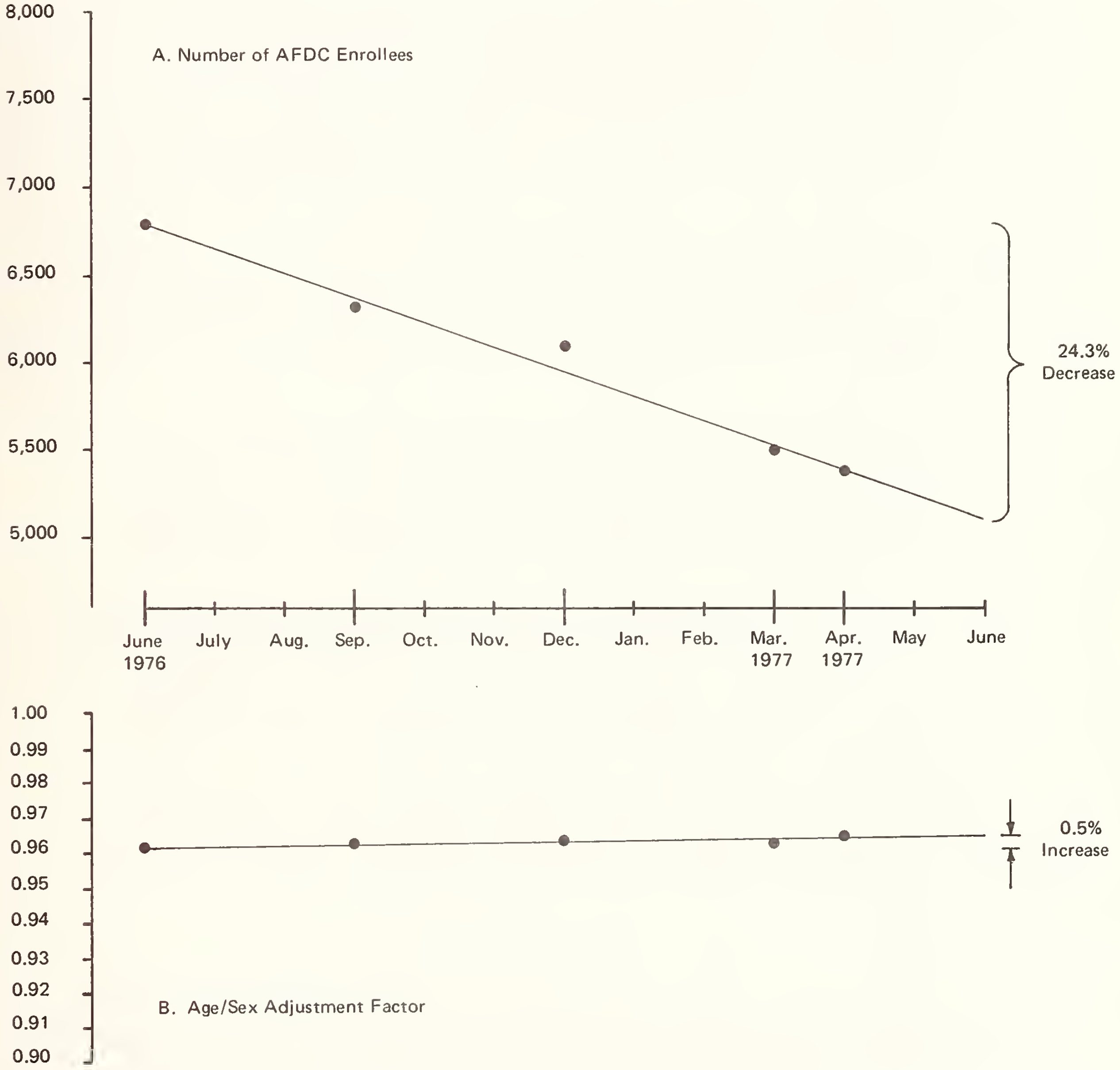
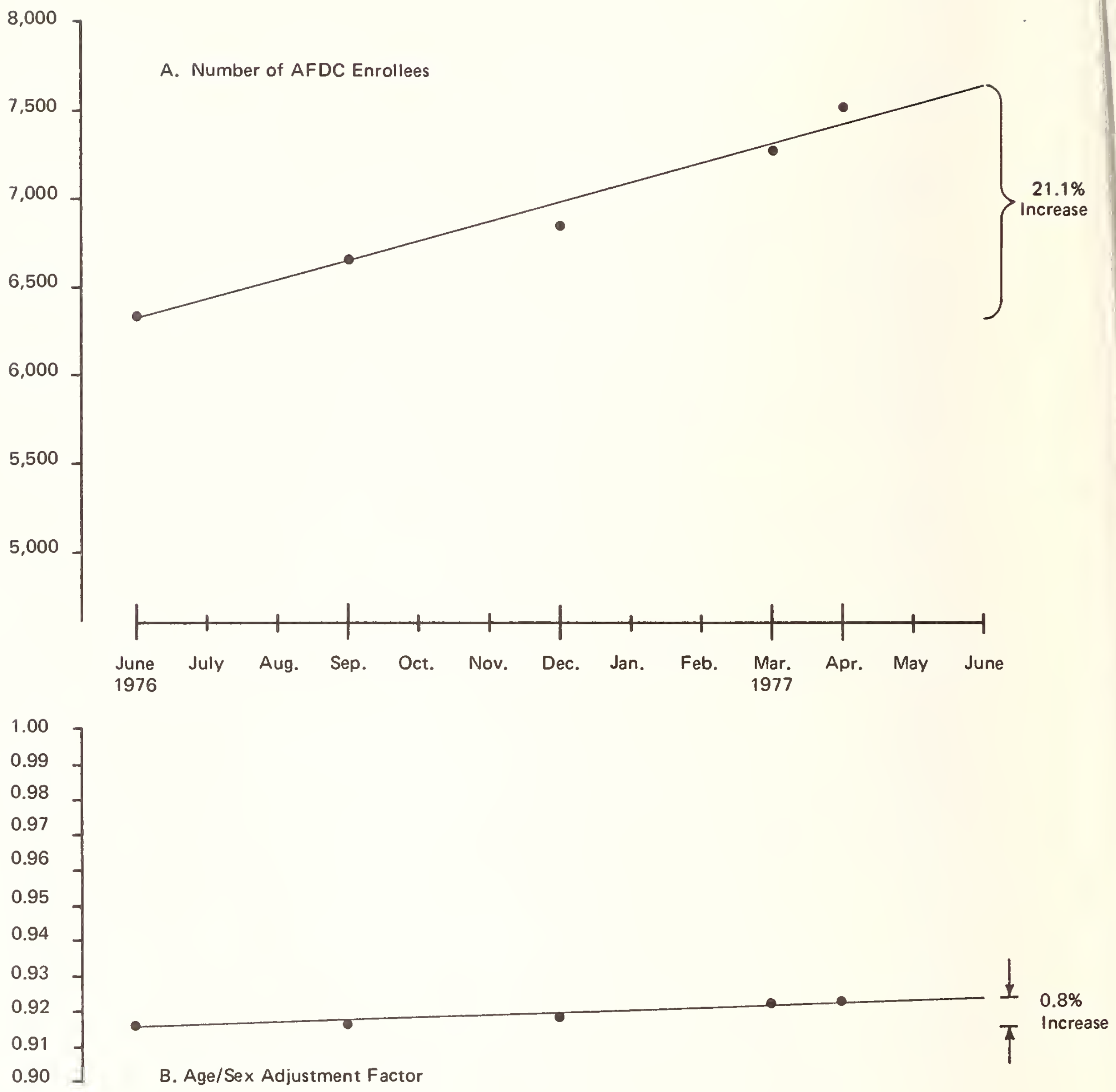


Illustration 7–5: Change in Age/Sex Mix, HMO M



examined. This is not an issue with the OAS category, since nearly all members of this group, whether or not HMO enrollees, have Medicare coverage. It *is* important for the ATD category, which in California accounts for 7% of the Medicaid enrollees in HMOs, and 15% of the capitation payments.*

Illustration 7-6 shows the contrast between the Medicare proportion among ATD enrollees and among fee-for-service ATD beneficiaries for California's 13 Medicaid-contracting HMOs. Column 4 contains estimates of the cost effect of the difference. It can be seen that the range of values is nearly the same as the range of age/sex adjustment factors displayed for the AFDC category in Illustration 7-3. This suggests that the Medicare proportion is as important an issue with the ATD category as the age/sex factors are for AFDC.

For California's ATD population, Medicare pays an average of 60% of the total health care costs for the ATD beneficiaries who have Medicare coverage. Using HMO B from Illustration 7-6 as an example, the following logic explains how the cost effect in Column 4 of that illustration was calculated:

1. Let C represent the average per capita health care cost for ATD beneficiaries. Let M represent the *proportion* of a given ATD population that has Medicare coverage. The average per capita cost to Medicaid for this population would be $(60\% \times M)C + (1-M)C = (0.6M + 1 - M)C = (1 - 0.4M)C$.

2. For HMO B (Ill. 7-6), the value of M is 34%. The average per capita health care cost would be $(1-0.4(34\%))C = 0.86C$.

3. For the county in which HMO B is located, the value of M is 29%, and the cost would be $(1-0.4(29\%))C = 0.88C$.

4. The ratio of costs would then be $0.86C/0.88C = 0.98$. All else being equal, the ATD per capita health care cost to the HMO should be 98% of the fee-for-service cost in the same county, due to the HMO's higher proportion of ATD with Medicare coverage.

3. Incentive Adjustments

The well-known economic theory of prepayment is that the at-risk, prospective per capita form of reimbursement carries financial incentive to minimize unnecessary utilization and implement efficient methods of health care delivery. In theory, there is also the incentive toward health

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*The Aid to the Blind (AB) category is so small numerically--0.2% of enrollees and 0.4% of capitation payments--that adjustments for Medicare proportion and age/sex distribution are ignored.

HMO (1)	Percent with Medicare PHP* (2)	Percent with Medicare County** (3)	Cost Effect of Difference*** (4)
A	31%	27%	0.98
B	34	29	0.98
C	35	33	0.99
D	36	33	0.99
E	44	33	0.95
F	31	33	1.01
G	30	33	1.01
H	34	28	0.97
I	33	33	1.00
J	42	33	0.96
K	30	30	1.00
L	18	29	1.05
M	30	29	1.00
All PHPs	35%	32%	0.99

*As of August 1977

**For HMOs covering more than one county, a weighted average is used. Weighting was by distribution of the HMO's ATD enrollees among counties.

***Assumes Medicare pays 60% of health care costs for ATD enrollees with Medicare coverage.

Illustration 7-6: Percent of ATD enrollees with Medicare coverage.

maintenance, but with a Medicaid population, in which eligibility (and with it enrollment) is being lost at the rate of 5-10% per month, this is more theory than actuality. The incentive, then, is not only to minimize utilization, but also to avoid investment in services and administrative procedures that may be an added expense in the short run, but pay off in the long run.

For example, a problem-oriented medical record may be considered superior to the traditional medical record, but it requires more effort and expense (at least initially), and may not increase efficiency. Regularly scheduled examinations may be considered desirable from a quality of care standpoint, and even cost-effective in the long run, but the immediate effect may be an increase in demand for care. There are a number of other services that may not be considered as absolutely necessary, but are deemed desirable, and are not financially self-justifying in the short run. Such services may be encouraged by offering supplements to the basic capitation rate for those HMOs that implement such improvements.

We describe here one method for calculating such incentive increments to the capitation rate. The discussion is theoretical--it has not been attempted in California. The method is the following:

1. Designate a total increment to the capitation payment that would be available for all improvements to be encouraged. For example, this might be an additional 5%, which should be high enough to represent a real incentive, but low enough to stay below fee-for-service costs.

2. Develop a list of improvements to be encouraged, ranked according to desirability, but not necessarily cost. Assign points to each item on the list in accordance with its judged importance, so that the total number of points is 100.

3. The total number of points an HMO "earns" from the list, multiplied by the total percentage of capitation designated for incentives, determines the amount of additional payment to the HMO. For example, if the basic capitation rate for an HMO (average of all aid categories) is $42.00, and 5% above this is allowed for incentives, the per capita amount allowed for incentives is $42.00 X 5% = $2.10. If the HMO earns 80 points from items on the incentive list, the added payment would be $2.10 X .80 = $1.68.

Illustration 7-7 contains an example of such an incentive list, with an assignment of points to each item. The contents of the list and/or the assignment of points could be modified from year to year in accordance with program priorities. In fact, when the majority of HMOs incorporate an item from the list it would be appropriate to consider that item a standard requirement, recognized in the basic capitation rate.

1.	Disenrollment rate at least 20% less than average	15 points
2.	No more than _x_ day average waiting time for non-urgent appointment	5 points
3.	Consumer education program meeting defined standards	15 points
4.	On-premises emergency service	5 points
5.	Full work-up procedures for new enrollees, including health assessment, facilities orientation, selection of primary practitioner, etc.	20 points
6.	Use of problem-oriented medical record	15 points
7.	Medical staff agreement on formal protocols for at least _x_ disease processes in the ambulatory setting	15 points
8.	Absence of substantive complaint on quality audit examinations (expressed in quantitative terms)	10 points

Illustration 7-7: Example of Incentive List

4. Biased Selection

Biased selection is said to occur whenever an HMO obtains an enrollee population that is either significantly more in need of health care, or significantly less in need of health care, than anticipated by the rate-setting analysis. (A more pragmatic definition would be in terms of use of services rather than need, since it is the cost effect that is of paramount concern.) The result is that the capitation rate is either more or less than it ought to be.

A Medicaid agency, as purchaser of prepaid care for its beneficiaries, tends to be primarily concerned with favorable selection by a contracting HMO. Over the years of the California prepaid health plan program, the State has continually increased its efforts to monitor the marketing and enrollment practices of the plans, in order to detect and halt any tendency to enroll only the relatively healthy Medicaid beneficiaries, or to disenroll those who have proved to be high users.

The HMO, on the other hand, is primarily concerned about adverse selection, because of the immediate effect it has on the financial balance sheet. There is a tendency for HMOs to claim adverse selection, in order to justify requests for higher rates from the Medicaid agency. One argument is that there is a greater incentive for high users to stay with an HMO once enrolled than there is for non-users; over time the enrollee mix becomes adverse even if there is no bias in the marketing and enrollment process.

We have seen in the preceding sections of this chapter that the Medicaid-contracting HMOs in California have, in some cases, experienced favorable selection in terms of age/sex mix for AFDC or Medicare/non-Medicare mix for ATD. That is, they would have favorable selection if these factors were not taken into account in the rate-setting process. To the extent that factors such as these are used in rate-setting, the probability of biased selection--either favorable or adverse--is diminished. (This is the reason for continual refinement of actuarial analysis, of course, and the benefit that justifies its cost.) There is no doubt, however, that biased selection can occur even when aid category, service area, age and sex are all incorporated in the rate-setting procedure.

It is virtually impossible to quantify, in terms of cost effect, the results of biased selection. The data available are almost all related to use of health care rather than need, which remains a measurement problem for health services research. Even when the issue is attacked in terms of measuring relative use of services, the problem requires data and analytic techniques that go beyond those ordinarily used for actuarial work. (This is true almost by definition, since if biased selection effects were quantifiable through actuarial analysis they could be incorporated in the rate-setting process.)

Still, specific types of biased selection can be studied. For example, one California HMO has claimed that private physicians in the area, upon discovering that they have a Medicaid patient who is pregnant, are advising the patient to enroll in the HMO for the duration of the pregnancy. A study could be designed to test this hypothesis. Another HMO has claimed that there is increasing demand from its Medicaid enrollees for the more expensive miracles of modern medicine, such as total hip replacement. This also could be studied.

In theory, a Medicaid agency is in an excellent position to measure biased selection resulting from marketing and enrollment procedures, since it has data resulting from fee-for-service care under Medicaid prior to enrollment. It should be possible to use these data to classify Medicaid beneficiaries as high or low users, then to use these classifications to observe the mix of those who become enrollees. We have not yet seen this done.

Studies such as these are often not done because their expense is all too visible and their value is not. We consider them to be part of any serious effort to develop rate-setting competence--a worthwhile investment for part of the dollars that a Medicaid agency can save with HMO contracts.

CHAPTER 8: RISK-SHARING

The discussion of rate-setting in the preceding chapters has been under the assumption that the objective was a prospectively determined per capita rate that would constitute sole reimbursement to the contracting HMO for services rendered during the contract period. Under this arrangement, the HMO is commonly described as being completely at risk for the costs of health care services. This simply means that the organization must absorb any cost incurred in excess of the (aggregate) capitation payment; and the HMO retains all savings resulting from cost less than the capitation payment.

This use of the phrase "at risk" is something of a misnomer, since prepaid capitation reimbursement is rational only to the extent that risk can be partially eliminated. The Medicaid agency and the HMO enter into such a payment arrangement only because there is mutual agreement that the HMO can have a reasonable degree of control over, and thus reduce the risk associated with, the use of health services by the enrollee population. To the extent that there can be actuarial accuracy in predicting utilization-related factors, the HMO is less susceptible to the vagaries of the future, and thus less at risk.

At the other end of the spectrum of reimbursement arrangements is cost reimbursement, which is used almost universally in Medicaid programs for hospital inpatient payments. Cost reimbursement of HMOs has also been used in the Medicare program. Under cost reimbursement there is no risk of loss to the HMO, and no risk of excessive payment to the purchasing agency. There is also no incentive to the HMO to increase efficiency, and little incentive to contract.*

In this chapter we will discuss risk-sharing reimbursement, which falls between the two extremes of cost reimbursement and "at risk" arrangements. Risk-sharing can be defined as a reimbursement arrangement under which the purchaser agrees to assume partial responsibility for costs, if actual cost exceeds predicted cost; and/or the purchaser shares in the savings if actual cost is less than predicted cost.

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*Although cost reimbursement subverts the fundamental economic theory of prepayment, it is not a bad strategy for a government agency purchasing HMO care, if HMOs will accept such contracts. It is unlikely that the HMO will be less efficient for the agency's beneficiaries than for the rest of its enrollee population, so the agency will realize the benefits of the financial incentives being paid for by other payors. This is the HMO analog of the contention by cost-reimbursed fee-for-service providers that private payors are subsidizing government programs.

Why Consider Risk-Sharing?

There are two major reasons why risk-sharing reimbursement may be desirable. First, it is appropriate in situations where the predictive accuracy of usual actuarial methods is suspect; in other words, when there is more risk than an HMO can reasonably be expected to assume. Following are three examples:

1. A newly established HMO, with a small enrollee population, is more susceptible to the adverse cost effects of a few expensive cases than is the large, well-established organization. It would be reasonable for a Medicaid agency to offer risk-sharing contracts to such organizations in order to expand the program's prepaid coverage.

2. All HMOs that do not own their own hospitals are susceptible to the current inflation in hospital charges, which have been accelerating at a rate that makes actuarial projections difficult. As we will illustrate below, it is possible to construct a risk-sharing arrangement that would hold HMOs at risk for hospital utilization (which they should be able to control), but not for hospital costs per unit of service.

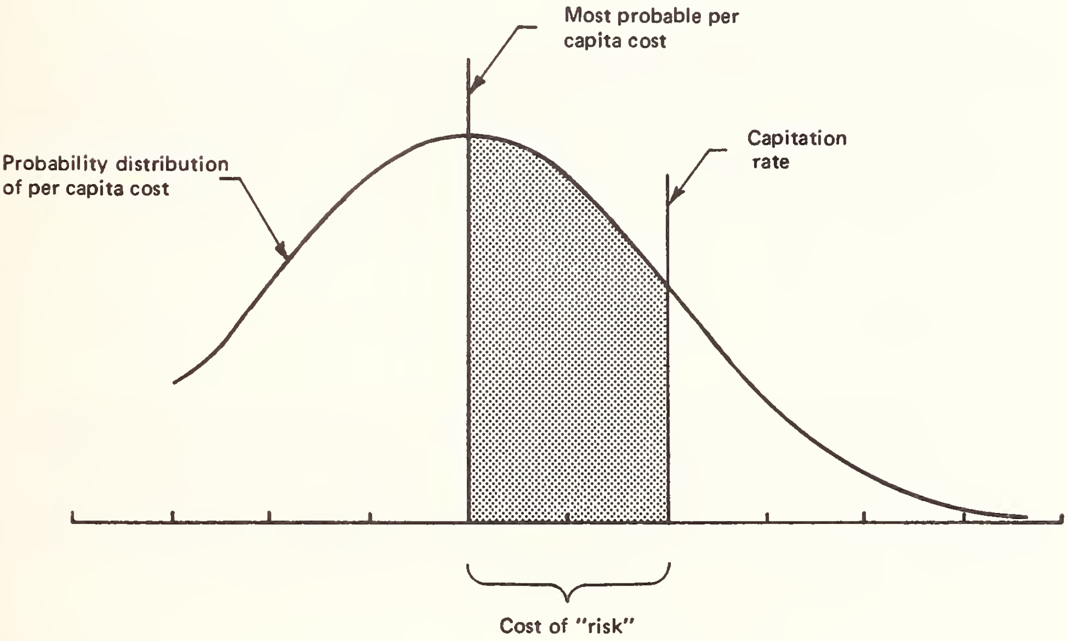
3. Among Medicaid beneficiaries, the Medically Needy and Medically Indigent aid categories are difficult to capitate, because (a) duration of eligibility is relatively short, and (b) these beneficiaries are by definition high users. A risk-sharing arrangement would permit HMO enrollment until such time as there is enough experience with these groups to make accurate actuarial analyses.

A second reason for considering risk-sharing is that it may result in lower per capita cost to the Medicaid agency than the "at risk" contract. This is based on the following reasoning:

1. When a Medicaid agency and an HMO mutually agree upon a capitation rate, the rate is (in the judgment of the HMO, if it is acting rationally) higher than the cost of necessary health care services is most likely to be. In an informal sense, we can consider this rate to be at the upper end of a "confidence interval" around the most probable per capita cost. This could be diagrammed as shown in Illustration 8-1.

2. In other words, part of the capitation rate is paying the HMO for risk. This part is represented by the shaded area in Illustration 8-1. The Medicaid agency is paying for the probability of higher than normal costs, whether or not such costs are realized.

Illustration 8–1: Hypothetical probability distribution of per capita cost


Most probable per capita cost
Capitation rate
Probability distribution of per capita cost
Cost of "risk"

3. A risk-sharing arrangement reduces the risk to the HMO, so the Medicaid agency need no longer pay for the full amount of risk. For example, if a capitation rate were calculated at $35.00 for an "at risk" contract, the rate under an equivalent risk-sharing contract might be $33.00 plus 50% of any costs above $33.00 but less than $37.00, with cost above $37.00 the complete responsibility of the HMO. With this risk-sharing formula the Medicaid agency is guaranteed not to pay more than its original rate of $35.00 per person, but will pay more than $33.00 only if actual costs exceed $33.00.

We should clarify that this discussion of "confidence interval" and "payment for risk" is conceptual rather than analytical. It is rare in actuarial work to be able to put a formal confidence interval around estimated per capita costs. Also, actual costs are still at the discretion of the HMO to a marked degree, in spite of the inflation that pervades the health care field, so there is no objective meaning to the idea of the "true" cost of necessary and sufficient health care.

Risk-Sharing Formulas

There are a variety of ways to introduce the risk-sharing concept into a reimbursement scheme. One of the simplest is to establish a maximum cost to the HMO for any one enrollee. In California's prepaid health plan program a limit is set at $10,000 per Medicaid enrollee within the contract year. Services are valued according to the fee-for-service payment levels in order to establish whether the $10,000 limit has been reached. When it is exceeded for an enrollee, the HMO is reimbursed at the fee-for-service rates.

This risk limitation has been estimated to have the following value for each of the four aid categories capitated:

1. AFDC: 2.2% of the capitation rate.
2. ATD : 6.6%
3. OAS : 0.4%
4. AB : 3.2%

Following are examples of other ways in which risk-sharing may be formulated:

1. Sharing of excess cost or savings. For example, the Medicaid agency and the HMO may share equally in costs above a predetermined per capita amount, and share equally in savings that result from costs below that amount. If the baseline capitation payment were set at $35.00 and costs turned out

to be \$38.00, the Medicaid agency would pay the HMO an additional (\$38.00 - \$35.00) X 50% = \$1.50 per person after the cost determination had been made. If costs turned out to be \$34.00, the agency would recoup 50¢ per person.

The sharing ratio need not be constant; indeed, it could be a function of the difference between the predetermined rate and the actual cost. Illustration 8-2 represents a risk-sharing formula in which the agency's share of excess cost decreases as cost goes up, and the agency's share of savings increases as actual cost goes down.

2. Risk corridor. Risk-sharing may also be developed by holding the HMO completely at risk within predetermined limits, and reverting to cost reimbursement when these limits are exceeded. For example, the capitation rate might be \$35.00 and the risk corridor set at ±10%. The HMO would then be at risk only for \$3.50 of any excess costs, and would be able to retain only \$3.50 of any savings.

3. Combinations of the above. The risk corridor can be used together with a cost-sharing formula when the corridor is exceeded.

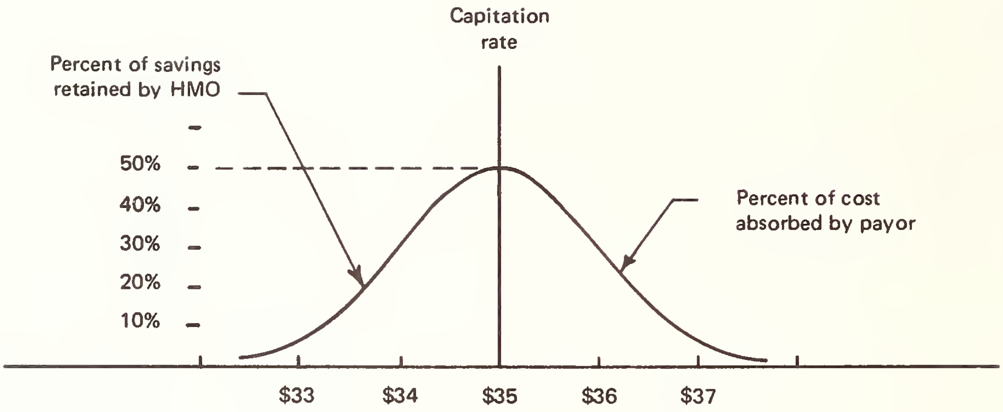
All of the above risk-sharing methods require that actual costs be determined and retroactive adjustments be made in the capitation payments. This adds administrative tasks considerably beyond those associated with the simple "at risk" reimbursement, equivalent to the requirements of reasonable cost reimbursement.

Factor-Specific Risk

The above formulas, which are applied to the capitation rate, do not differentiate among reasons for excess costs. Excess cost may result from factors beyond the control of the HMO, in which case risk-sharing is appropriate. But excess cost may also result from the HMO's own administrative inefficiency, which the Medicaid agency does not want to reward. It would be preferable to hold the HMO completely at risk for those elements of per capita cost for which it is directly responsible, with risk-sharing only for those influences that are beyond the HMO's control. For example, we noted above that it might be desirable to hold an HMO at risk for the cost effects of hospital utilization rates, but not for the cost effects of hospital charges per unit of service.

This consideration leads to definition of a concept we call factor-specific risk. We will explain this concept by using the language of the DUC model, discussed above in Chapter 3. In Illustration 8-3 we reproduce the demographic, utilization, and cost statistics used in

Illustration 8–2: Variable-ratio Cost/Savings Sharing



The curve represented is a normal probability distribution with mean = \$35.00 (the capitation rate) and σ = \$1.00.

A. Demographic Mix (D)

		No. of Members
1.	Males, 0-12	5,000
2.	Males, 13+	2,500
3.	Females, 0-12	5,000
4.	Females, 13+	7,500
		20,000

B. Utilization Rates (U)

	Units Per 1,000 Members Per Month		
D Category (1)	Physicians Visits (2)	Prescriptions (3)	Hospital Days (4)
1. Males, 0-12	323	273	33.5
2. Males, 13+	296	295	23.0
3. Females, 0-12	241	227	28.4
4. Females, 13+	409	854	103.9

C. Cost (C)

	Physicians Visits	Prescriptions	Hospital Days
Cost Per Unit of Service	$9.77	$4.41	$225

Capitation rate derived from above figures is $18.27.

Illustration 8-3: Demographic, Utilization, and Cost Predictions for Hypothetical HMO

Chaper 3 as actuarial assumptions for a hypothetical HMO population. We will consider these statistics to represent predicted values for a future contract period. As illustrated in Chapter 3, when multiplied together these statistics yield a capitation rate of $18.27 per month.

Simply stated, "factor-specific risk" means specifying a different risk-sharing formula for each of the three factors that together result in a capitation rate. In this example, we will assume that the Medicaid agency and the HMO have agreed upon the following reimbursement scheme:

1. The HMO will be completely at risk for the C factor--cost per unit of service.
2. There will be equal risk-sharing for the U factor--utilization rates. The agency and the HMO will share equally (1) the costs attributable to utilization rates higher than those predicted, or (2) the savings attributable to utilization rates lower than those predicted.
3. The HMO will have no risk for the D factor--demographic distribution.

Now let us assume that when the contract period has passed, the demographic, utilization and cost experience was actually that represented in Illustration 8-4. The HMO has realized a per capita cost of $19.95. The HMO has been paid at the rate of $18.27 and we now want to adjust this payment to reflect the above risk-sharing agreement.

The first provision--that the HMO is completely at risk for costs per unit of service--means that in calculating the final payment rate we will use the predicted values for these costs, given in Illustration 8-3. The third provision--no risk to the HMO for demographic factors--means that we will use the actual statistics in Illustration 8-4 in the final rate calculation.

The second provision--risk-sharing for utilization rates--requires that we carry out further calculation before arriving at the utilization figures to be used in the final rate. For each cell in the utilization rate table we must compare the actual value with the predicted value Equal sharing of risk means that we will use the following value in the final calculation:

$$\text{Predicted} + \frac{(\text{Actual} - \text{Predicted})}{2}$$

For example, the physician visit utilization was predicted to be 323 visits per 1,000 enrollees per month for the category "males, 0-12." It turned out to be 331. The value to be used in the final rate calculation is 323 + (331 - 323)/2= 327. For "females, 13+" the predicted rate was 409 and the actual rate was 405, so the final payment utilization rate would be 409 + (405 - 409)/2 = 409 - 2 = 407.

A. Demographic Mix (D)

		No. of Members
1.	Males, 0-12	5,600
2.	Males, 13+	2,600
3.	Females, 0-12	5,200
4.	Females, 13+	8,600
		22,000

B. Utilization Rates (U)

	Units Per 1,000 Members Per Month		
D Category (1)	Physicians Visits (2)	Prescriptions (3)	Hospital Days (4)
1. Males, 0-12	331	240	37.5
2. Males, 13+	285	290	23.5
3. Females, 0-12	251	261	29.4
4. Females, 13+	405	950	117.5

C. Cost Per Unit of Service (C)

Physicians Visits	Prescriptions	Hospital Days
$9.70	$4.45	$220

Per capita cost derived from above figures is $19.95.

Compared with capitation rate from Illustration 7-3, this represents loss of $19.95 - $18.27 = $1.68 per enrollee - month.

Illustration 8-4: Demographic, Utilization and Cost Experience for Hypothetical HMO.

The table of utilization rates to be used in the final calculation is given in Illustration 8-5. When these utilization rates are used in conjunction with the demographic statistics from Illustration 8-4 and the unit costs from Illustration 8-3, the result is a final payment rate of $19.44. This is less than the actual cost of $19.95 (Illustration 8-4), but more than the initial capitation rate of $18.27. In this instance, the HMO has been partially protected against the adverse cost effects of inaccurate predictions of demographic mix and utilization rates. What would have been a loss of $19.95 - $18.27 = $1.68 per enrollee-month was reduced to a loss of $19.95 - $19.44 = $0.51 per enrollee-month.

In this example we did not have risk-sharing for the C factor, which means that cost determination was not necessary in order to make the final settlement. Since the HMO was held completely at risk for the unit costs, the predicted values of these costs were used in the final calculation. This is a convenience not obtained with risk-sharing formulas defined in terms of the capitation rate as a whole rather than its factors.

It may also be possible to establish risk-sharing for certain unit costs without requiring complicated subsequent cost-finding. If the intent is to share risk only for hospital charges, for example, for HMOs that contract for all hospital care, the charges from the hospitals to the HMO should be readily verifiable from financial records.

Summary

Risk-sharing introduces administrative complexities beyond those associated with the simple "at risk" reimbursement. In addition to the usual actuarial analysis needed to predict per capita costs, there must be periodic retrospective analysis of actual experience and a procedure for adjustments to the capitation payment. For certain types of risk-sharinng it may be necessary to undertake a financial auditing effort comparable to that used with cost-reimbursed providers.

The advantage of risk-sharing is that it permits a Medicaid agency to use prepaid per capita reimbursement in situations with actuarial uncertainty. It retains the cost control incentive of that form of reimbursement, but limits the incentive to cut costs to the point of jeopardizing quality of care.

The factor-specific risk concept permits considerable flexibility in adapting risk-sharing to specific situations. The HMO may be held financially accountable for the factors under its control, but only partially at risk for those that are not.

D Category	Physicians Visits Predicted	Physicians Visits Actual	Physicians Visits Final	Prescriptions Predicted	Prescriptions Actual	Prescriptions Final	Hospital Days Predicted	Hospital Days Actual	Hospital Days Final
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. Males, 0-12	323	331	327	273	240	256.5	33.5	37.5	35.5
2. Males, 13 +	296	285	290.5	295	290	292.5	23.0	23.5	23.25
3. Females, 0-12	241	251	246	227	261	244	28.4	29.4	28.9
4. Females, 13 +	409	405	407	854	950	902	103.9	117.5	110.7

The "Final" rates, together with D statistics from Illustration 8-4 and C statistics from Illustration 8-3, yield a final payment rate of $19.44. This compares with a predicted cost of $18.27 and actual cost of $19.95.

Illustration 8-5: Utilization Rates to be used for Final Payment Calculation

CHAPTER 9: ADMINISTRATION

In this final chapter we will discuss major issues related to implementing prepaid rate setting as one of the administrative functions of a state Medicaid agency. Our major point of reference is California's prepaid health plan program, but we believe the issues discussed here will be common to any Medicaid agency that attempts to develop HMO contracts as an alternative to fee-for-service.

Data Collection

As the California Department of Health attempted to move toward actuarial **rate setting** for its HMO Medicaid contracts, the most serious constraint was the quantity and quality of data available to apply the techniques that have been described in preceding chapters. We expect this will be the case in most other states as well. If the procedures described in preceding chapters are followed, there are three classes of data that are necessary, as follows:

1. Data from the Medicaid program's fee-for-service experience necessary to calculate the fee-for-service maximum (Chapter 4). Among the types of data needed for rate setting, these should be the most readily available. We noted in Chapter 4 that calculating the fee-for-service maximum is analogous to a budget projection process and that the data files necessary to do the calculation should be available in any state that meets Federal MMIS requirements. At minimum, we would expect any reasonably well run Medicaid program to produce routine tabulations of monthly payments and beneficiary counts, so that the "month of payment" approach described in Chapter 4 could be used.

2. Data necessary to calculate age and sex adjustment factors--specifically, per-capita costs by age and sex category for AFDC beneficiaries. A state with MMIS capability will have the data files necessary to calculate these statistics from its Medicaid experience, but it probably will not be producing these statistics as a routine matter. The cost of tabulating this information will thus be an added administrative expense associated with prepaid rate setting. As noted in Chapter 7, however, it would suffice to do this tabulation only once every 3 or 4 years since it is the relative cost across age and sex categories that determines the adjustment factor, not the actual value of per-capita costs in each of the categories. If the assumption can be made safely that inflation in health care costs affects all age and sex categories equally, there is no need to repeat this tabulation frequently.

3. Data from prepaid health care delivery organizations to be used in establishing utilization and cost assumptions specific to such organizations. These are the data that are the most difficult to obtain because, by definition, they do not derive from the fee-for-service Medicaid data files. This warrants more extensive discussion than the first two classes of data.

Obtaining Data From Prepaid Health Organizations

Within this class of data there is again a tripartite division representing classes of sources: (1) Statistics published by prepaid health organizations or other agencies reporting the experience of such organizations; (2) data available from the HMO's internal information sytems; and (3) data required by the single state agency to be reported to that agency as part of the HMO contract agreement.

At the end of Chapter 6 we have listed references that will be helpful for rate-setting analysis. The list will continue to grow, of course, as more reports of prepaid health organization experience find their way into the literature. Continuous review of the literature for information such as this should be a routine task in any state agency that has, or anticipates having, Medicaid contracts with HMOs. The HEW Department is also increasing its efforts to produce resource materials of this type, and a state should be able to turn to both the Health Care Financing Administration and the HMO Qualification Office for assistance.

Ad hoc data collection from information resources within Medicaid-contracting HMOs is another data collection method that should not be neglected. When we first undertook actuarial rate setting for California's PHP program, we found that the statistics routinely reported from the plans were insufficient for our purposes. We were able to develop adequate utilization and cost assumptions only because we discovered that many of the plans had developed the type of information we needed for their internal management requirements and, perhaps more importantly, they were willing to share this information with us.

This latter fact--the willingness to share this information--may seem surprising, but we found that when the plans were approached in a professional manner they understood that it was in the mutual interest of the single state agency and each Medicaid-contracting HMO to have the best possible data used for rate-setting purposes. The major technical problem with this ad hoc approach, of course, is the lack of uniformity among the HMOs in terms of the types of statistics produced for their own management requirements. For this reason we regard this type of data collection only as an expedient and temporary solution, to be used while uniform reporting of the necessary specificity is being developed.

It is in this area of uniform reporting of utilization and cost experience that Medicaid-contracting HMOs stand in sharpest contrast to fee-for-service Medicaid providers. In the fee-for-service setting, paid claims data represent a valuable information resource for describing the types and quantities of health care services obtained by the beneficiary population, the cost of those services (that is, charges), and (in the better programs) the medical problems that were the causes of those services. With an HMO contract these detailed data are lost since claims for individual services are not submitted. Typically, the reporting requirements for HMOs are defined in terms of rather gross statistics.

This brings us to one of the current controversies in HMO reporting requirements under government contracts--should the contractors be required to report detailed, person-specific data analogous to that contained on fee-for-service claims, or is the reporting of summary statistics sufficient? Following are the major arguments on either side of this question:

1. In favor of summary statistics only, no encounter data reporting: Saves the administrative expense for both HMO and the government agency; still provides sufficient information for rate-setting and monitoring purposes; gives the HMO the type of autonomy from government interference that it ought to have; encounter data reporting would represent a very expensive imposition on HMOs for government-contracting purposes only, which will inhibit the development of new organizations and the willingness of established organizations to deal with Medicaid and Medicare beneficiaries.

2. Arguments in favor of encounter data reporting: Prepaid health organizations, which are still relatively new and experimental in most parts of the country, require the same degree of monitoring by a single state agency as do the fee-for-service providers; summary statistics are not sufficient for rate-setting and monitoring purposes; most HMOs have some form of automated internal encounter data system for their own management needs, so this type of reporting would be far from an unreasonable expectation--in fact, it may be preferable to the HMOs.

In the two Medicaid programs that have made most use of contracts with HMO-like organizations--California and Michigan--there have been attempts to implement encounter data reporting as a contract requirement, but to date neither attempt has been successful. In Michigan, the reporting of encounter data was in fact achieved, but the State did not implement the computer system necessary to edit and process these data. In California, plans for encounter data reporting have been proposed for several years, but again the resources required to implement the necessary information system have not been committed. California's federally funded PHRED Project has now begun an experiment in which the feasibility of encounter data reporting will be evaluated.[1]

The information requirements for rate setting alone cannot resolve this issue of the appropriate form of routine reporting from Medicaid-contracting HMOs. It is the more extensive information requirement associated with quality assurance monitoring that will undoubtedly determine the issue, and discussion of this area is beyond the purpose of this book. For rate-setting purposes alone, we believe that the necessary statistics can be obtained in summary form.

In Appendix 2 we reproduce the reporting format presently required in California's PHP program, which was recently revised in order better to support rate setting. The reporting package also calls for mortality and morbidity statistics that are not directly related to rate setting, but the bulk of the information requested comprises utilization rates by category of service and aid category, and estimated cost figures by category of service. The appendix also contains notes on the method by which the California Department of Health audits the quality of data reported on this form.

Using An Actuarial Consultant

As a result of dissatisfaction with the rate-setting methods used in California's PHP program, the California Welfare and Institutions Code was amended in 1977 to add (among a wide variety of other items) the following provision: "...The director shall engage and rely upon the services of an actuary or consulting actuary in determining perspective per capita rates." The law further defines these terms as follows: "'Actuary' or 'consulting actuary' means a person who has engaged in the practice of actuarial science and has demonstrated, by training and experience, actuarial competence to the director." This law thus falls short of requiring the services of a person certified as an actuary,[2] but the intent is clear--the Department of Health shall either employ or consult with a person with strong actuarial credentials.

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[1] The formal findings of this evaluation will not be available until the end of 1979. In the meantime, we would be happy to supply interested readers with more information about the issues and concepts that are being tested in this project.

[2] Such as would be indicated by membership in The Society of Actuaries or the Casualty Actuarial Society.

For other states the use of an actuary is optional, and probably will remain so as long as the rate-setting method satisfies all interested parties. We do recommend, however, that an actuarial consultant be used for the following purposes:

1. To assist the single state agency in refinement of actuarial methods. In this book we have attempted to lay out the general principles of actuarial rate setting for HMO-Medicaid contracts, and in some cases specific examples of how those principles might be implemented, but we recognize that each state will need to adapt these methods to its own situation. In this adaptation the services of a consulting actuary should help considerably.

2. As an information resource when developing utilization and cost assumptions. A well-established actuarial firm will have had considerable experience with rate setting in a variety of situations, and much of this experience will have resulted in data that can be adapted to rate setting for Medicaid-contracting HMOs. In our rate-setting work in California we have made extensive use of such information resources of a consulting actuarial firm.

3. To supply expert judgment in areas where data are not sufficient for a strictly analytical approach. It is rare in actuarial work to have data that are as complete and dependable as would be required for a mechanistic, formula approach to setting rates. There are often gaps that can only be bridged by applying the kind of judgment that comes from extensive rate-setting experience. This is a situation in which it is particularly helpful to have a qualified actuarial consultant.

4. To certify the reasonableness of the rate-setting method used by the single state agency. It would be extremely unusual for a Medicaid-contracting HMO to accept without question the rates developed by the state, and it is to be expected that both the rate-setting method and the data which it utilizes will be called into question. Moreover, for Medicaid contracts the HEW Department must also approve the rates, which may introduce a third dimension of critique. Use of a reputable independent actuarial consulting firm should help the state establish its case that a reasonable rate-setting method has been used.

However, we do not recommend that a single state agency attempt to turn over the complete responsibility for establishing rates to a consulting actuarial firm. For one thing, the technical aspects of actuarial rate setting can never be completely divorced from policy issues, and the state should retain its ability to explore the various policy options and to express those options in terms of the manner in which the rates are set. At a more technical level, the data files that are produced and used within a Medicaid program very often have attributes that are not well enough documented for an outside consultant to understand--only analysts who have worked with these data files over a considerable period of time appreciate the types of inference they will (and will not) support. It would be unfair to a consultant, and ultimately adverse for the state, to simply turn over these data files for use by the consultant.

Finally, the single state agency is ultimately responsible for the rates that are set, and should have the expertise within its own staff to deal with the policy and technical issues of rate setting. As any reputable consultant will acknowledge, the consulting role has best effect when the consultant is used as an extension of, rather than a replacement for, the program staff's own competence.

In summary, an actuarial consultant can play a role analogous to that of a certified public accountant. The use of a CPA for periodic audits by no means obviates the use of accounting procedures and accountants within a firm. Similarly, the consulting actuary should be used for verification and refinement of rate-setting methods, but the primary responsibility for rate setting should remain within the single state agency itself.

Monitoring

The essence of actuarial analysis is prediction--trying to find the per-capita figures that reflect the utilization rates and costs per unit of service that will be realized over a future contract time period. Any actuarial method will be susceptible to influences that could not reasonably have been anticipated but, in general, the ultimate test of any method is the degree to which the future bears out the predictions that have been made. A fundamental requirement for evaluating and refining actuarial methods, then, is comparison of previous predictions with current experience.

This aspect of rate setting can be labeled "monitoring." Although the rates themselves may be established only once per year--or even less frequently for longer-term contracts--monitoring is a function that should be carried out routinely. The objective is to analyze the extent to which utilization and cost experience differs from that which was predicted when the rates were set and, to the extent possible, to establish the reasons for these deviations. Only through this type of continuous review will it be possible to refine the analysis that feeds into the next rate-setting cycle.

Actuarial Research

Akin to the monitoring function is a function we label actuarial research. This refers to the process of refining the parameters that are used in deriving the utilization and cost assumptions that, multiplied together, yield a capitation rate.

For example, in Chapter 7 we illustrated age and sex adjustment by using 12 age and sex categories. Actuarial research would consider the question of whether this many categories were necessary, and whether the class boundaries used for the age groups were optimal. It might well suffice, particularly for the AFDC population, to use only two categories: Women of child-bearing age and all others.

Similarly, in Chapter 6 we have illustrated the use of 8 categories of service for deriving utilization and cost data. It might well be that several of these categories could be combined with one another without significant loss in predictive accuracy. Or it might be that the "hospital inpatient" category should, in fact, be divided into several subcategories in order to increase predictive accuracy.

Issues such as these are the objects of actuarial research, of which a great deal remains to be done. For the Medicaid population in particular, we are far from achieving optimum definitions of demographic categories and categories of service.

Rate Changes and Contract Amendments

Single state agencies that have not yet used HMOs as Medicaid providers may not appreciate the implications of a formal, legal contract for provision of health care services versus the usual informal "provider agreement" with fee-for-service providers. In general, it should be realized that whatever State bureaucratic procedures are necessary for executing service contracts will also apply to contracts with HMOs for coverage of Medicaid beneficiaries. In addition, under Federal regulations the HEW Regional Office must approve all Medicaid contracts that result in expenditures of $100,000 or more per year--a requirement that will cover virtually all HMO contracts.

This means that whenever rates are modified, a contract amendment must be executed. This, in turn, means that the rate amendment must satisfy not only the directly contracting parties--the single state agency and the HMO--but the HEW Department and all of the other state agencies that must approve contracts. In California, for example, the Department of Finance and the Department of General Services routinely review rate amendments, and the justification for them, before the amendments are submitted to the Regional HEW Department Office for approval.

This means that after all the actuarial work is finished, there remains a multi-stage process before proposed new rates become effective. A significant problem perceived by any of the several interested parties to this process may call for further justification from the rate-setting analyst, or even revision of the actuarial procedure.

The complications of such a process can well be imagined. In California, for example, it has typically taken three or four months after the basic rate-setting analysis was completed before new rates were represented in contract amendments. In 1976, the rates that were intended to become effective on July 1 actually did not become effective until November 1.

The point being made here is that rate setting involves responsibilities far beyond even the best actuarial analysis. The control agency politics within the state, and the relationship between the state and the HEW Department, will all have significant impact on the level of effort that is required to effect rate amendments. The cogency with which rate justifications are presented will be equally as important as the quality of the actuarial analysis itself.

A converse relationship between rates and the contract relationship with an HMO is this: Any changes in the contract requirements that affect the costs of the HMO--either through changing administrative requirements or changing risk for health care cost--should be incorporated in the rates. This is a principle that was not strictly observed in the California prepaid health plan program, with the eventual result that the following provision was placed into the California Welfare and Institutions Code in 1977:

> The obligations of a prepaid health plan shall be changed only by contract or contract amendment wherein payment for the changes, whether payment results in any increase or decrease in the prior per capita rates paid to a prepaid health plan, shall be determined in accordance with this section and paid to affected prepaid health plans at the time the changes are effective.

Again, present California State law is undoubtedly more stringent in this regard than laws in other states or the Federal regulations under which single state agencies must operate, but it is a principle of equity that any cost-related changes in contract requirements be reflected in the rates. In fact, the cost effects of proposed contract changes should be evaluated and translated into capitation rate terms as part of the policy analysis that precedes the adoption of such changes by the single state agency. This means that the rate-setting analysts should be closely in touch with all policy analysis related to prepaid contracts.

Summary

It would be gratuitous for us to present recommendations on the exact manner in which the rate-setting function should be implemented organizationally--this will depend upon the structure of each single state agency and the nature of the civil service classifications used in that state. However, the administrative issues discussed in this chapter lead us to the conclusion that a state involved in prepaid Medicaid contracts with HMOs should have a core group of health care analysts who have lead responsibility for the policy analysis and the technical developments that are associated with rate setting. Members of this group need not be actuaries in the usual sense, although they should understand actuarial principles and be able to communicate intelligently with actuaries and other specialists in quantitative analysis.

This group would have a responsibility broader than the detailed numerical manipulations that lead to each set of rates--it would be a type of intelligence unit for accumulating knowledge on reasonable expectations of health care delivery in the prepaid mode and, in particular, its cost. Much of the actual numerical analysis might be done by analysts in other specialized units within the single state agency, or by consultants, but it would be the responsibility of this group to, first, determine that the results of the analysis do in fact represent reasonable rates and, second, present these results in a documentation package that will satisfy the control agencies within the state structure, the HEW Department, and ultimately the Medicaid-contracting HMOs.

APPENDIX 1: BUDGET PROJECTION TECHNIQUE USED IN CALIFORNIA'S MEDICAID PROGRAM

This appendix will give an overview of the budget projection technique used in California's Medicaid program (commonly known as Medi-Cal). The purpose here is only to provide sufficient information to allow analysts in other states to decide whether the method might have application in their own program. If the method does appear to have such utility, the interested reader may obtain more detailed information by contacting John Chambers, Budget Office, Department of Health Services, 714 P Street, Sacramento, CA 95814.

Base Estimates

The fee-for-service portion of the Medi-Cal program's base estimate is prepared using a canned statistical package called Time Series Processor (TSP). TSP is specifically designed for regression analysis. Each of 14 aid categories for 13 different provider-service types are estimated separately using individual program decks for each service type. These estimates are in turn put together to build the total base estimate for fee-for-service Medi-Cal.

Least-square regression analysis is the statistical technique utilized to project the current and budget years into the future from a 3-year history file. The history file consists of monthly paid-claims data summarized by service type and aid category, showing users, claims, units, and payment.

The estimate methodology was developed with the basic concept that users generate claims, which in turn generate units of service, which in turn generate payments. The program logic follows a similar pattern for each aid-service group. Users are first projected based on a trend, the number of working days at the fiscal intermediary each month, and seasonal variations. Claims are projected based on actual and projected users, a trend, and seasonal variations. Units are projected from claims in a similar manner when units data are available on the history file for that service type. Payments are projected from units, a trend, and seasonal variables. When units data are not available for a given type of service, claims data are used to project future payments. Any identifiable changes in a service category (i.e., rate increase, program change, data reporting change, etc.) are assigned a special variable in the projection equation to help explain sudden shifts in the data which affect the projected trend.

Categories of Service

As noted in the above summary, projections are made independently for each of 13 categories of service (and for each of 14 aid categories, for a total of 13 X 14 = 182 projections). Following are the 13 service categories:

1. Drugs
2. State hospitals
3. Intermediate care facilities
4. Skilled nursing facilities
5. County hospital inpatient care
6. Community hospital inpatient care
7. County hospital outpatient care
8. Community hospital outpatient care
9. Physicians
10. Other medical services
11. Home health care
12. Medical transportation
13. All other services

Variables

The four major measurement variables are users, claims, units, and payments. These have the following definitions:

1. Users--An unduplicated count of the number of Medi-Cal beneficiaries each month who obtain at least one service in the category of service being examined. "User" is always defined in terms of a specified category of service.

2. Claims--The number of claim forms for the category of service, represented in the paid-claims data for each month.

3. Units--Number of units of service represented for the category of service in the claims paid each month. Units of service have been defined for only the first six of the above 13 service categories. For drugs, the unit is a claim line. For the next five categories, the unit is a day of inpatient care.

4. Payments--Total number of dollars reimbursed for services in the category of service during the month.

The following two other variables are routinely used in the regression equations:

1. Number of working days each month at the fiscal intermediary. The volume of claims represented in month of payment data has proven to be related to this variable.

2. A seasonal classification variable for each month. There are definite seasonal cycles in health care utilization, which tend to be taken into account by this variable.

Finally, additional variables may be used to represent policy or programmatic changes that have introduced a discontinuity in the experience data. Following are two examples from Medi-Cal program history:

1. Modification of the eligibility determination process for the medical needy and medical indigent, effective July 1976, produced an increase in beneficiaries in these aid categories above the pre-existing trend line. When making projections of users, a dummy variable is used to classify months in claims payment history as being either before or after the effective date of this change, so that the projections are not skewed by this short-term surge in beneficiaries.

2. In November 1976 a physician rate increase became effective. The effect was again a sharp upward increment in payment to physicians, over a relatively short period of time. A dummy variable is used to keep the regression equation sensitive to the underlying trend, without being misled by this temporary jump.

Functional Forms of Estimating Equations

The ultimate objective is to estimate total payments for Medi-Cal services in each month over a subsequent time period. This is done for each of the 234 aid-and-service category combinations in a stepwise process. Each step represents a multiple linear regression, which means that the value of one variable of interest is estimated as a linear combination of other variables.

For those categories of service in which units of service have been defined, the following are the steps in this process:

1. "Users" is first estimated as a linear function of fiscal intermediary working days, the seasonal variable, and any dummy variables introduced to reflect policy or program changes.

2. Then "claims" is estimated as a linear combination of number of users (derived from the first regression equation), the seasonal variable, and other dummy variables.

3. "Units" is then estimated as a linear function of number of claims (estimated from the second equation), the seasonal variable, and other dummy variables.

4. "Payments" are then estimated as a linear combination of units (estimated in the third equation), the seasonal variable, and other dummy variables.

For the categories of service for which units of service have not been defined, the following steps are used:

1. As before, users are estimated as a linear function of fiscal intermediary working days, the seasonal variable, and the dummy variables.

2. Also as before, claims are estimated as a linear function of users, the seasonal variable, and the dummy variables.

3. Payments are estimated as a linear function of claims (instead of units, as was the case for the categories of service for which units have been defined), the seasonal variable, and the dummy variables.

It should be noted that the "dummy variables" used in these equations to account for discontinuous effects of historical policy and program changes are not necessarily the same for each of the three or four above steps, nor for each category of service. One of the reasons for using this stepwise approach is that these historical changes can be related to only those categories of service and only to those measurement variables (users, claims, units, or payments) for which they are relevant.

Adjustments to the Base

Since the base estimate projections described above reflect only past program changes, it is necessary to adjust these estimates in order to arrive at a final Medicaid budget estimate. These adjustments are developed through the "budget assumption process," in which the program managers supply the Budget Office with information on any program changes which are assumed to occur during the period which the estimate covers. These program changes are priced out by the Budget Office, adjusted for payment lags and implementation dates and then added to the base estimates to produce the final estimate. While these adjustments may affect all aid categories and all service types, they are more generally restricted to some subset of this population.

A recent example of such a program change was a new policy of restricted abortion coverage. Assumptions had to be developed regarding the percentage of abortions that would remain covered under the new policy, the cost reduction of the abortions no longer covered, the probably increase in term deliveries, and the added cost due to that increase.

Accuracy of the Projection Method

At this writing, only two full years of experience are available under the projection method described here, but it appears to be much more accurate than previous procedures. The illustration on the following page compares estimated and actual expenditures over six years prior to, and two years subsequent to, adoption of this technique. The increased accuracy is readily apparent.

Illustration A1-1: Accuracy of Medi-Cal Budget Projections

Fiscal Year (1)	December Estimate (2)	Actual Expenditures (3)	Percent Difference (4)
1. 1969-70	$ 887.3 x 10^6	$ 978.6 x 10^6	-9.3%
2. 1970-71	1058.3	1056.2	+0.2
3. 1971-72	1442.6	1212.9	+18.9
4. 1972-73	1458.8	1346.0	+8.4
5. 1973-74	1472.3	1609.2	-8.5
6. 1974-75	1919.8	1845.8	+4.0
. New projection method introduced for FY 1975-76:			
7. 1975-76	2074.4	2058.3	+0.8
8. 1976-77	2455.9	2461.5	-0.2

APPENDIX 2: REPORTING REQUIREMENTS FOR MEDICAID-CONTRACTING HMOs IN CALIFORNIA

This appendix has two sections. First, a 27-page document that is the present reporting form for Medicaid-contracting HMOs in California. The form contains definitions and should be self-explanatory.

The second section is a form used to evaluate the quality of utilization data reporting. This questionnaire is used as a checklist during on-site review of the HMO's internal information systems.

SECTION 1: PREPAID HEALTH PLAN UTILIZATION REPORTING REQUIREMENTS

Reporting Procedures

One copy of the revised PHP utilization reports must be received by the Billing Coordinator for the Alternative Health Systems Branch according to the following timetable:

Reporting Period	Report Due
October-December	February 15
January-March	May 15
April-June	August 15
July-September	November 15

TABLE OF CONTENTS

Section Page(s)

I. Ambulatory Care Reporting Instructions .... 1 - 4

II. Report Form U-1: .Ambulatory Care .... 5 - 6

III. Inpatient Care Reporting Instructions .... 7 - 8

IV. Report Form U-2: Inpatient Care 9

V. Hospital Inpatient and Ambulatory Morbidity Reporting Instructions 10

VI. Report Form M-1: Hospital Inpatient and Ambulatory Morbidity .... 11 - 12

VII. Mortality Reporting Instructions 13

VIII. Report Form M-2: Mortality .... 14 - 16

IX. Fiscal Reporting Instructions .... 17 - 23

X. Report Form F-1: Third Party Payments and Receipts 24

XI. Report Form F-2: Direct Costs of Health Care Services.... 24 - 26

XII. Report Form F-3: General and Administrative Expenses..... 26 - 27

California Department of Health
Division of Medical Assistance
Alternative Health Systems Branch
714 P Street, Room 1540
Sacramento, California 95814
(916) 322-3122
January 24, 1978

AMBULATORY CARE

Report U-1 is to be used to report ambulatory or outpatient medical care provided to prepaid Medi-Cal enrollees covered by your Plan.

Ambulatory Care

Health services rendered to members who are not confined to a health care institution. Ambulatory services are often referred to as "outpatient" services as distinct from "inpatient" services.

Ambulatory or outpatient care includes care provided in the following settings:

1. Provider office,
2. Clinic,
3. Hospital outpatient department,
4. Hospital emergency room, and
5. Beneficiaries' homes.

Excluded from the above are persons who are inpatients in hospitals, skilled nursing facilities, intermediate care facilities, and other medical inpatient care facilities.

These data cover only Medi-Cal enrollees enrolled in the plan and exclude persons receiving Fee-For-Service through your facilities and private health plan enrollees.

Encounter

A face-to-face contact between a member and a provider of health care services who exercises independent judgment in the care and provision of health care service(s) to the member. The term independent is used synonymously with self-reliance in order to distinguish between providers who assume major responsibility for the care of individual members and other personnel who assist in providing that care.

Medical Services

For purposes of this report, all medical services relate to the provision of health care services for the prevention, diagnosis, treatment and rehabilitation of illnesses by a physician, other trained health professionals, or other individuals as allowed by the State law.

Provider

A health professional who takes responsibility for making an assessment of the health status of a member and exercising independent judgment as to the health services rendered to such members.

MEDICAL SERVICE DEFINITIONS

Physician Encounters

Encounters provided by physicians or licensed physican extenders or assistants under direct supervision of a physician inclusive of all services except radiology, laboratory and injections/immunizations which should be reported in their appropriate section.

a. Office encounters are defined by 1969 CRVS Codes 90000-90090.

b. Home encounters are defined by 1969 CRVS Codes 90100-90170.

c. Outpatient surgeries are surgeries performed on an outpatient basis and defined within 1969 CRVS Codes 10000-69920.

d. Consultations are defined by 1969 CRVS Codes 90600-90630.

e. Other M.D. encounters performed by physicians which are not accounted for by any of the items which have preceded or which follow this service category.

f. Physician extender encounters are defined as care provided by nurse practitioners and licensed physicians assistants under appropriate supervision and within the scope of their licensure. If patients are treated solely by physician extenders, then the visit should not be counted as a physician encounter. If however, patients are treated by both a physician and a physician extender during the same visit, this should be counted as a physician encounter only.

Dental Care

Dental care provided by dentists or dental hygienists practicing within their licensed capabilities. Dental services are defined by Title 22, Section 51506.

a. Encounters are defined on page 1.

b. Procedures are defined by procedure numbers 9010-9916 in Title 22, Section 51506.

c. Dentures are defined by procedure number 9700-9703 in Title 22, Section 51506.

Vision Care Encounters

Services performed by a physician, as set forth by 1969 CRVS Codes 92000-92300, or by an optometrist as described by Title 22, Sections 51518 and 51519, and services performed by an optician as described in Title 22, Section 51519.

4. *Mental Health Encounters*

   Psychiatric services (1969 CRVS Codes 90800-90852) performed by a psychiatrist or other physician, or by a psychologist or an MSW within the scope of their licensure as defined by Title 22, Section 51505.3.

5. *Hospital Outpatient (Emergency)*

   Emergency room encounters are those unscheduled visits performed in designated hospital emergency rooms or areas, inclusive of all procedures.

6. *Radiology (X-rays)*

   Procedures as defined by 1969 CRVS Codes 70000-79400. These services are all inclusive of the radiologist report. Excluded are services performed in conjunction with an emergency room encounter.

7. *Laboratory (Pathology)*

   Procedures as defined by 1969 CRVS Codes 80000-89360 or Title 22, Section 51529. These services are all inclusive of the collection of the laboratory sample. Excluded are services performed in conjunction with an emergency room encounter.

8. *Selected Therapy*

   a. Physical therapy refers to procedures performed by a physician (1969 CRVS Codes 97000-97741) or physical therapist (Title 22, Section 51507).

   b. Speech therapy refers to procedures performed by a certified practitioner (Title 22, Section 51507.2, code numbers 0831-0849).

   c. Hearing therapy refers to procedures performed by a physician (1969 CRVS Codes 92500-92570) or a licensed practitioner (Title 22, Section 51507.2, code numbers 0801-0849, 3001-3002).

9. *Crippled Children's Services (CCS) Referrals*

   All referrals of eligible children to Crippled Children's Services (CCS).

10. *Home Health Encounters*

    Services defined by Title 22, Section 51523.

11. *Injections/Immunizations (when administered by Plan personnel)*

    Services defined by 1969 CRVS Codes 90700-90705.

12. *Pharmaceutical Services (Excluding drugs administered in conjunction with an emergency room encounter)*

Report the number of prescriptions filled.

13. *Medical Transportation Services*

Record the number of emergency transportation services as well as non-emergency medical transportation for patients to plan facilities/hospitals/Skilled Nursing/Intermediate Care Facilities, as defined by Title 22, Section 51151 and described in Section 51323.

14. *Other Non-Physician Medical Encounters*

Services not elsewhere classified.

PHP Reporting System
California Department of Health

Plan Name: ____________

Period: ____________ ______
Month - Month Year

U Series: *Utilization Reporting*

U1: *Ambulatory Care*

MEDICAL SERVICE CATEGORIES (1)	AFDC (2)	ATD (3)	OAS (4)	AB (5)	TOTAL (6)
1. Physician encounters					
a. Office encounters	____	____	____	____	____
b. Home encounters	____	____	____	____	____
c. Outpatient surgery	____	____	____	____	____
d. Consultations	____	____	____	____	____
e. Other MD encounters	____	____	____	____	____
f. Physician extenders	____	____	____	____	____
2. Dental Care					
a. Number of encounters	____	____	____	____	____
b. Number of procedures	____	____	____	____	____
c. Number of dentures	____	____	____	____	____
3. Vision care encounters	____	____	____	____	____
4. Mental health encounters	____	____	____	____	____
5. Hospital outpatient (Emergency)	____	____	____	____	____
6. Radiology (Number of procedures)	____	____	____	____	____

(Continued on Following Page)

Frequency: Quarterly

PHP Reporting System
California Department of Health

Plan Name: ____________________

Period: ____________ ______
Month - Month Year

U Series: *Utilization Reporting*

U1: *Ambulatory Care*

MEDICAL SERVICE CATEGORIES (1)	AFDC (2)	ATD (3)	OAS (4)	AB (5)	TOTAL (6)
7. Laboratory (Number of procedures					
8. Specialized Therapy					
a. Physical					
b. Speech					
c. Hearing					
9. Crippled Children's Services referrals					
10. Home health encounters					
11. Injections/immunizations					
12. Pharmaceutical services					
13. Medical transportation services					
14. Other non-physician medical encounters					

Frequency: Quarterly

INPATIENT CARE

Report U-2 is to be used to report utilization statistics for prepaid Medi-Cal enrollees covered by your Plan in hospitals and other inpatient facilities.

1. *Inpatient Discharge*

   The release of an inpatient from a hospital, that is, termination of hospitalization by death or by disposition to a place such as residence, nursing home, or another hospital.

2. *Discharge Days*

   Total number of hospital days for plan enrollees who were discharged during the reporting period. Hospital days should be reported separately from SNF/ICF days. Note: In counting hospital days, the day of admission is counted as one day, but day of discharge is not. For example, a patient admitted and discharged on the same day is counted as a one-day stay.

   a. *Hospital (OB)*

      Days for inpatients with final diagnoses represented by ICDA* Codes 640-678.

   b. *Hospital (Non-OB)*

      All other inpatient days.

   c. *Newborn Days*

      Days of inpatient hospitalization for a newborn while mother is still hospitalized and after her discharge if the newborn remains. If a newborn is discharged with its mother and then readmitted, these days should be subsequently recorded under non-OB under items 1b and 2b.

3. *Inpatient Surgical Procedures*

   These are surgeries on hospitalized patients as defined within CRVS Codes 10000-69920. Anesthesiology services identified by modifiers to the RVS code should not be included as a procedure.

---

*Use uniformly either of the following:

H-ICDA
Hospital Adaptation of ICDA
Second Edition, Volumes I and II
Commission of Professional and
Hospital Activities
Ann Arbor, Michigan

Eighth Revision
International Classification of Disease
(ICDA-*) Volumes I and II
U.S. Department of Health, Education
and Welfare, PHS Service Pub. No. 1693
National Center for Health Statistics
Washington, D.C.

4. *Skilled Nursing Facility (SNF)/Intermediate Care Facility (ICF) Services*

   a. Inpatient physician visits are defined by 1969 CRVS Codes 90300-90470.

   b. Inpatient days refer to the number of days plan enrollees were patients in SNF/ICF facilities during the reporting period.

PHP Reporting System
California Department of Health

Plan Name: ______________

Period: ____________ ______
Month-Month Year

U Series: *Utilization Reporting*

U2: *Inpatient Care*

MEDICAL SERVICE CATEGORIES (1)	AFDC (2)	ATD (3)	OAS (4)	AB (5)	TOTAL (6)
1. Total inpatient discharges					
a. Hospital (OB)					
b. Hospital (non-OB)					
c. Newborns					
2. Total discharge days					
a. Hospital (OB)					
b. Hospital (non-OB)					
c. Newborn days					
3. Number of inpatient surgical procedures					
4. SNF/ICF services					
a. Number of inpatient physician visits					
b. Number of SNF/ICF patient days					

Frequency: Quarterly

HOSPITAL INPATIENT AND AMBULATORY MORBIDITY

Report M-1 is intended to capture statistics on the reason for each encounter. There are two major categories of encounters:

1. *Inpatient Hospitalizations*

   Each person discharged from an acute general hospital during the reporting period should be classified according to the final discharge diagnosis of the cause of hospitalization and counted in the appropriate line of the table.

2. *Ambulatory Encounters*

   Classify each encounter in terms of the primary reason for the encounter, using the general categories shown in the table. (Note: The "abortions" line is intended to count encounters in which an abortion was actually performed, not encounters for patients who are expected to have, or have had, abortions).

Report only for prepaid Medi-Cal enrollees covered by your Plan.

PHP Reporting System
California Department of Health

Plan Name: ______________

Period: ______________
Month-Month Year

M Series: *Morbidity and Mortality Reporting*

M1: *Hospital Inpatient and Ambulatory Morbidity*

NUMBER OF HOSPITAL DISCHARGES WITH FINAL DIAGNOSIS OF: (1)	H-ICDA CODE RANGE* (2)	AFDC (3)	ATD (4)	OAS (5)	AB (6)	TOTAL (7)
1. Special conditions and examinations without sickness	Y00-Y19					
2. Newborn in hospital	Y20-Y29					
3. Infective and parasitic diseases	000-136					
4. Neoplasms	140-239					
5. Endocrine nutritional and metabolic diseases	240-279					
6. Diseases of the blood and blood-forming organs	280-289					
7. Mental disorders	290-318					
8. Diseases of the nervous system and sense organs	320-389					
9. Diseases of the circulatory system	390-458					
10. Diseases of the respiratory system	460-519					
11. Diseases of the digestive system	520-577					
12. Diseases of the genito-urinary system	580-629					
13. Abortions	640-646					
14. Deliveries	650-664					
15. Other complications of pregnancy, childbirth, or the puerperium	630-639 670-678					
16. Diseases of the skin and subcutaneous tissue	680-709					

Frequency: Quarterly

*Equivalent ICDA-8 codes may be used:

H-ICDA
Hospital Adaptation of ICDA
Second Edition
Commission on Professional and Hospital Activities
Ann Arbor, Michigan

Eighth Revision International Classification of diseases (ICDA-8)
Volumes I and II
U.S. Department of Health, Education and Welfare
Public Health Service Pub. No. 1693
National Center for Health Statistics
Washington, D.C.

PHP Reporting System
California Department of Health

Plan Name: ____________________

Period: ____________________
Month-Month Year

M Series: *Morbidity and Mortality Reporting*

M1: *Hospital Inpatient and Ambulatory Morbidity*

NUMBER OF HOSPITAL DISCHARGES WITH FINAL DIAGNOSIS OF: (1)	H-ICDA CODE RANGE* (2)	AFDC (3)	ATD (4)	OAS (5)	AB (6)	TOTAL (7)
17. Diseases of the musculo-skeletal system	710-739					
18. Congenital anomalies	740-759					
19. Symptoms and ill-defined conditions	780-796					
20. Accidents, poisonings, and violence	800-999					
AMBULATORY ENCOUNTERS						
1. Prenatal and postnatal care	Y06-Y07					
2. Other special conditions and examinations without sickness	Y00-Y05 Y08-Y19					
3. Abortions	640-646					
4. Accidents, poisonings, and violence	800-999					
5. Other						

Frequency: Quarterly

*Equivalent ICDA-8 codes may be used:

H-ICDA Hospital Adaptation of ICDA Second Edition Commission on Professional and Hospital Activities Ann Arbor, Michigan	Eighth Revision International Classification of Diseases (ICDA-8) Volumes I and II U.S. Department of Health, Education and Welfare Public Health Service Pub. No. 1693 National Center for Health Statistics Washington, D.C.

MORTALITY

Report M-2 should contain data for all persons known to the plan to have died during the reporting period.

The report should include the following information for each known death:

1. Date of Death
2. Name
3. Sex
4. Age
5. Medi-Cal Number
6. Place
7. Information Source
8. Diagnosis

Plan records, the County Coroner's office, County Welfare offices, and corroboration from friends or relatives of the deceased can provide information for the completion of this report. Deaths may occur in circumstances unknown to the Plan, but the Plan is expected to know about and report all inpatient deaths.

Report only for Medi-Cal eligible enrollees covered by your Plan.

PHP Reporting System
California Department of Health

Plan Name: ____________________

Period: ____________________
Month - Month Year

M Series: *Morbidity and Mortality Reporting*

M2: *Mortality*

Date of Death (1)	Name (Last name first) (2)	Sex (3)	Age (4)	Medi-Cal Number (5)	Place (6) ☐ Inpatient ☐ Other
Information Source (7)	Diagnoses: (8)				
Date of Death (1)	Name (Last name first) (2)	Sex (3)	Age (4)	Medi-Cal Number (5)	Place (6) ☐ Inpatient ☐ Other
Information Source (7)	Diagnoses: (8)				
Date of Death (1)	Name (Last name first) (2)	Sex (3)	Age (4)	Medi-Cal Number (5)	Place (6) ☐ Inpatient ☐ Other
Information Source (7)	Diagnoses: (8)				
Date of Death (1)	Name (Last name first) (2)	Sex (3)	Age (4)	Medi-Cal Number (5)	Place (6) ☐ Inpatient ☐ Other
Information Source (7)	Diagnoses: (8)				
Date of Death (1)	Name (Last name first) (2)	Sex (3)	Age (4)	Medi-Cal Number (5)	Place (6) ☐ Inpatient ☐ Other
Information Source (7)	Diagnoses: (8)				

PHP Reporting System
California Department of Health

Plan Name: ____________

Period: ____________
Month - Month Year

M Series: *Morbidity and Mortality Reporting*

M2: *Mortality*

Date of Death (1)	Name (Last name first) (2)	Sex (3)	Age (4)	Medi-Cal Number (5)	Place (6) ☐ Inpatient ☐ Other
Information Source (7)	Diagnoses: (8)				
Date of Death (1)	Name (Last name first) (2)	Sex (3)	Age (4)	Medi-Cal Number (5)	Place (6) ☐ Inpatient ☐ Other
Information Source (7)	Diagnoses: (8)				
Date of Death (1)	Name (Last name first) (2)	Sex (3)	Age (4)	Medi-Cal Number (5)	Place (6) ☐ Inpatient ☐ Other
Information Source (7)	Diagnoses: (8)				
Date of Death (1)	Name (Last name first) (2)	Sex (3)	Age (4)	Medi-Cal Number (5)	Place (6) ☐ Inpatient ☐ Other
Information Source (7)	Diagnoses: (8)				
Date of Death (1)	Name (Last name first) (2)	Sex (3)	Age (4)	Medi-Cal Number (5)	Place (6) ☐ Inpatient ☐ Other
Information Source (7)	Diagnoses: (8)				

PHP Reporting System
California Department of Health

Plan Name:________________

Period: ________________
Month - Month Year

M Series: *Morbidity and Mortality Reporting*

M2: *Mortality*

	Date of Death (1)	Name (Last name first) (2)	Sex (3)	Age (4)	Medi-Cal Number (5)	Place (6) ☐ Inpatient ☐ Other
	Information Source (7)	Diagnoses: (8)				
	Date of Death (1)	Name (Last name first) (2)	Sex (3)	Age (4)	Medi-Cal Number (5)	Place (6) ☐ Inpatient ☐ Other
	Information Source (7)	Diagnoses: (8)				
	Date of Death (1)	Name (Last name first) (2)	Sex (3)	Age (4)	Medi-Cal Number (5)	Place (6) ☐ Inpatient ☐ Other
	Information Source (7)	Diagnoses: (8)				
	Date of Death (1)	Name (Last name first) (2)	Sex (3)	Age (4)	Medi-Cal Number (5)	Place (6) ☐ Inpatient ☐ Other
	Information Source (7)	Diagnoses: (8)				
	Date of Death (1)	Name (Last name first) (2)	Sex (3)	Age (4)	Medi-Cal Number (5)	Place (6) ☐ Inpatient ☐ Other
	Information Source (7)	Diagnoses: (8)				

FISCAL REPORT

Quarterly Financial Obligations and Expenditures as reported on Report F, Sections, F1-F3.

For plans that service other than prepaid Medi-Cal beneficiaries (i.e. Commercial members of fee-for-service), the figures indicated should reflect an estimate of the total expenses that can be allocated to prepaid Medi-Cal. This estimate should be calculated by prepaid Medi-Cal utilization rather than by percent of membership.

Where plans capitate to a medical group for a range of services, this capitation amount should be allocated to the various services it covers. For example, if $10.00 per enrollee per month is capitated to cover physician services, x-ray and laboratory expenses, the $10.00 should be broken out (estimated if necessary) by those categories of service.

Fiscal Information

F-1 *Third-Party Payments and Receipts*

1. Report the total amount the plan billed insurance companies or other third-party organizations during the quarter regardless of when the service was provided.

2. Report the total amount the plan received from insurance companies or other third-party organizations during the quarter, regardless of when the service was provided.

F-2 *Medical Service Categories*

Column 2

Costs are for services supplied through the plan either by providers, provider groups, and other suppliers of medical care, treatment, equipment, etc., plan-employed or through on-going contractual arrangements with such entities. Routine hospitalization by plan physicians should be reported in this section, even if each hospitalization is paid fee-for-service.

The service categories correspond generally to the categories entered on report U-1 (Ambulatory Care) and report U-2 (Inpatient Services).

Column 3

This section is an accounting of non-contracted Plan expenditures for out-of-area services and other unanticipated services. The latter includes fee-for-service payments for specialists, emergency treatment provided through non-plan channels, etc.

F-3 *General and Administrative Expenses*

General and administrative expenses are to be allocated between administration (2) and medical (3). The criterion to be used in determining the appropriate classification is: costs incurred as a result of the operation of the plan are administrative costs; costs that would be incurred in the provision of medical care through a medical care delivery system are medical costs.

The definitions of cost categories correspond generally to the categories entered on report U-1 (Ambulatory Care) and report U-2 (Inpatient Services) unless otherwise indicated. Costs are to be recorded only for the plan's PHP Medi-Cal population.

Cost Definitions

F-2 *Medical Service Categories*

1. *Physician Care*

All physician and physician extender costs of providing health care services, excluding physician costs applicable to inpatient surgical services. These costs include payroll expense (salaries, taxes, and fringe benefits), capitation payments, and fee-for-service charges. These costs should be broken down into the following categories:

a. Office Encounters
b. Home Encounters
c. Outpatient Surgery
d. Consultations
e. Other M.D. Encounters
f. Physician Extenders

2. *Dental Care*

Costs of providing dental services to enrollees. Such costs are to include the salaries and related costs for oral surgeons, periodontists, orthodontists, dental specialists, lab, x-ray, prosthetics and other direct dental costs.

3. *Vision Care*

Costs of providing vision services to enrollees. Such costs would be the salaries and related costs for optometrists, vision specialists, and other direct vision services costs.

4. *Mental Health Care*

Costs of providng mental health services to enrollees. Salaries and related costs for psychiatrists, psychologists, ancillary staff, and other directly related mental health ervices costs are to be included.

5. *Hospital Outpatient (Emergency)*

Costs incurred for hospital emergency room services.

6. *Radiology*

Costs incurred in providing radiology services, including payroll expense, outside x-ray costs, and other directly related radiology service costs. Excluded are costs associated with an emergency room visits and dental x-ray costs.

7. *Laboratory*

Costs of providing diagnostic tests, associated payroll expense, outside laboratory costs, and other directly related in-house laboratory service costs. Excluded are costs associated with an emergency room visit and dental laboratory services.

8. *Specialized Therapy*

Costs of providing enrollees with specialized therapy services. Payroll expenses for physicians, therapists, aides, assistants related to the provision of specialized therapy services, outside costs, and other directly related costs are to be included. These costs should be allocated according to the following categories:

a. Physical
b. Speech
c. Hearing

9. *Home Health Care*

Costs of providing attendant health care services to enrollees at their places of residence.

10. *Injections/Immunizations*

Costs incurred in administering injections and immunizations at medical facility. These costs should not be recorded as Pharmaceutical services in No. 11. Immunization and Injectables dispensed at a pharmacy are not to be included here.

11. *Pharmaceutical Services*

Costs of operating a pharmacy within the plan or payments to commercial pharmacies. Included are payroll costs of the pharmacist and staff, cost of drugs, and other directly related costs including dental prescriptions. Excluded are costs associated with a hospital outpatient visit.

12. *Inpatient Hospital Care*

Costs incurred in providing inpatient hospital services to enrollees confined to a hospital. This should include physician charges resulting from services provided by the hospital not to include PHP staff physicians. These costs should be broken down into the following categories:

a. Hospital (OB - Including Newborns)
b. Hospital (Non-OB)
c. Newborn Days

13. *Inpatient Surgical Care*

Physician costs directly related in providing surgical services to enrollees while they are confined to a health care facility. This should include all costs associated with the surgery such as the assistant surgeon and anesthesiology expenses. These costs should not be included in Number 1, Physician Services.

14. *Skilled Nursing Facility (SNF)/Intermediate Care Facility (ICF)*

Costs of providing inpatient services to enrollees confined to a Skilled Nursing Facility or Intermediate Care Facility. This should not include physician charges.

15. *Medical Transportation Services*

Costs of providing emergency transportation services as well as non-emergency medical transportation to enrollees, as defined in State regulations, Title 22, Section 51151 and described in Section 51323 to enable them to obtain health care services.

16. *Medical Supplies*

    Cost of all medical supplies and appliances provided to enrollees. Such items include wheelchairs, crutches, prosthetic and orthotic devices, hearing aids, etc.

17. *Other Medical Services*

    Costs incurred in the provision of health care services not included in categories 1 through 16 above.

F-3 *General and Administrative Expenses*

1. *Marketing Costs*

   Those costs incurred by the plan as a result of an activity in which information regarding the services offered by the plan is utilized to persuade a prospective enrollee to enroll or accept an application for enrollment including salaries of marketing personnel. Costs incurred to procure public endorsement of a plan are also to be included.

2. *Data Processing*

   All costs associated with the utilization of an EDP system, whether or not owned by the plan and used solely for the PHP Medi-Cal population. Salaries for manual data systems would be included under "Salaries" in column 3, No. 7.

3. *Legal and Accounting Services*

   Those costs incurred by the plan to obtain outside professional services in the legal and accounting field.

4. *Interest*

   Cost to the plan for borrowing money.

5. *Supplies*

   Cost of those office items consumed during the daily administration of the plan.

6. *Travel*

   The cost incurred by the plan as a result of business-related travel.

7. *Salaries*

   All salary and wage costs of ancillary professional administrative or clerical personnel. Such costs are to include payroll expenses (taxes and fringe benefits), bonuses, and any other compensation paid.

8. *Insurance*

   The cost to the plan to insure against losses. Such costs include premiums for liability, casualty, and fidelity insurance.

9. *Taxes and Licenses*

   The cost of taxes and licenses incurred as a result of the operation of a plan.

10. *Telephone and Telegraph*

    The cost incurred for these services.

11. *Utilities*

    The cost incurred for such services.

12. *Rent and/or Lease*

    a. *Building*

       Costs of leasing or renting the facilities of the plan (Depreciate if owned by the plan.)

    b. *Equipment*

       Cost to the plan to lease or rent equipment (Depreciate if owned by the plan.)

13. *Repair and Maintenance*

    Costs incurred for repairs and maintenance of the equipment and facilities.

14. *Continuing Professional Education*

    Cost incurred as a result of providing classes, seminars, workshops, etc., for professional health care staff to enable them to keep current in their particular profession.

15. *Peer Review*

    All costs incurred in the development and continued operation of the plan's peer review function.

16. *Health Education*

    Costs associated with the provision of Health Education services.

17. *Other*

All other general and administrative costs incurred that are not listed in 1 through 16 above. Itemize if other costs exceed 10% of total general and administrative expenses.

PHP Reporting System
California Department of Health

Plan Name: ____________________

Period: ____________________
Month-Month Year

F Series: *Fiscal Reporting*

F1: *Third Party Payments and Receipts*

F2: *Direct Costs of Health Care Services*

F3: *General and Administrative Expenses*

F-1 THIRD-PARTY PYAMENTS AND RECEIPTS

1. Amount billed to insurance company or other third-party organizations this quarter $ ____________

2. Amount received from billings to insurance company or other third-party organizations this quarter $ ____________

F-2 DIRECT COSTS OF MEDICAL SERVICE CATEGORIES

DIRECT COSTS OF MEDICAL SERVICE CATEGORIES (1)	SERVICES PROVIDED BY PLAN (2)	PAYMENTS TO PROVIDERS-OUT-OF-AREA & UNANTICIPATED SERVICES (3)
1. Physician Care (Total)	$	$
*a. Office Encounters	$	$
*b. Home Encounters	$	$
*c. Outpatient surgery	$	$
*d. Consultations	$	$
*e. Other MD encounters	$	$
*f. Physician extenders	$	$
2. Dental Care	$	$
3. Vision Care	$	$
4. Mental health care	$	$
5. Hospital outpatient (emergency)	$	$
6. Radiology	$	$
7. Laboratory	$	$

Note: All entries are dollars, rounded to the nearest dollar.

* Not required by Title 22, CAC 53340.

PHP Reporting System

Plan Name: ____________________
Period: ____________________
Month-Month Year

F Series: *Fiscal Reporting*
F1: *Third Party Payments and Receipts*
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F-2 DIRECT COSTS OF MEDICAL SERVICE CATEGORIES (1)	SERVICES PROVIDED BY PLAN (2)	PAYMENTS TO PROVIDERS-OUT-OF-AREA & UNANTICIPATED SERVICES (3)
8. Specialized therapy (Total)	$	$
*a. Physical	$	$
*b. Speech	$	$
*c. Hearing	$	$
9. Home health care	$	$
10. Injections/immunizations	$	$
11. Pharmaceutical services	$	$
12. Inpatient hospital care (Total)	$	$
*a. Hospital (OB)	$	$
*b. Hospital (non-OB)	$	$
*c. Newborn days	$	$
13. Inpatient surgical care	$	$
14. SNF/ICF services	$	$
15. Medical transportation services	$	$
16. Medical supplies	$	$
17. Other medical services	$	$
TOTAL	$	$

* Not required by Title 22, CAC 53340

PHP Reporting System
California Department of Health

Plan Name: ____________________

Period: ____________________
Month - Month Year

F Series: *Fiscal Reporting*

F1: *Third Party Payments and Receipts*

F2: *Direct Costs of Health Care Services*

F3: *General and Administrative Expenses*

F-3 GENERAL AND ADMINISTRATIVE EXPENSES (1)	ADMINISTRATION (2)	MEDICAL (3)
1. Marketing costs	$	$///////////
2. Data processing	$	$
3. Legal and accounting services	$	$
4. Interest	$	$
5. Supplies	$	$
6. Travel	$	$
7. Salaries	$	$
8. Insurance	$	$
9. Taxes and licenses	$	$
10. Telephone and telegraph	$	$
11. Utilities	$	$
12. Rent and/or lease (Total	$	$
a. Building	$	$
b. Equipment	$	$
13. Repairs and Maintenance	$	$

Plan Name: ____________________

Period: ____________________
Month-Month Year

F Series: *Fiscal Reporting*

F1: *Third Party Payments and Receipts*

F2: *Direct Costs of Health Care Services*

F3: *General and Administrative Expenses*

F-3 GENERAL AND ADMINISTRATIVE EXPENSES (1)	ADMINISTRATION (2)	MEDICAL (3)
14. Continuing professional education	$	$
15. Peer review	$	$
16. Health Education	$	$
17. Other	$	$
TOTAL	$	$

N. Wexler
PHRED
2/23/78

SECTION 2: Utilization Data Quality Qestionnaire

1. Describe the steps involved in completing the encounter form:

   a. Who initiates the encounter form?

      1. What information does this person include on the form?

         aid category ___ name ___ age ___ sex ___ other ___ list_______

      2. Does this person log in the information and keep a record of the encounter?

   b. After initiating the encounter form, who is it transmitted to?

      1. What information does the person enter on the form?

         RVS ___ referrals ___ ancillary services ___ pharmacy ___

         other ___ list _____________

   c. Answer b. for every person in contact with the encounter form.

2. Are the encounter forms sequentially prenumbered?

3. Are all encounter forms accounted for? If so, who investigates missing encounter forms?

4. Are all encounter forms compared and reconciled with the appointment book?

5. Are encounter forms reviewed for completion? If so, by whom?

6. Are referrals entered in a log book?

7. Are referrals investigated in 10 days if information has not been provided?

8. How are referrals included in the system to provide the data reporting requirements?

   a. from billing

   b. another form generated? If so, by whom?

   c. other

9. Are referrals detailed by RVS code and including ancillary services?

10. Are hospitalizations entered in a log book? SNF/ICF also entered?

    a. If yes, is it compared with the billing data?

11. How do hospitalizations and SNF/ICF statistics get included in the system used to provide the reporting requirements?

    a. from the billing

    b. another form generated? If so, by whom?

    c. other

12. Are hospitilizations broken out by OB, non-OB, and newborns?

13. Are inpatient surgical procedures defined by RVS code on the hospital bill? If not, how are these procedures separated out for the reporting requirements? Is anesthesiology counted separately or included as part of the surgical procedure?

14. Is the reporting system Manual or Computerized for:

    a. in-house services (including services provided under contract) M__ C__

    b. referrals M__ C__

    c. emergencies and out of area M__ C__

    d. hospitalizations, SNF/ICF M__ C__

    e. other M__ C__

15. Are all data elements being reported as required in the instructions to the reporting system?

    If not, which elements are different and why?

16. How are the reported statistics arrived at?

    a. tally of detail records

    b. approximations

    c. other, explain

    If the statistics are arrived at differently for different services (i.e., referrals, hospitalizations, in-house services), answer #16 for each type of service.

17. What aid codes do you assign to:

    a. AFDC ____________________

    b. OAS ____________________

    c. ATD ____________________

    d. AB ____________________

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